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## Lawrence Livermore National Laboratory
**Lawrence Livermore National Security, LLC, Livermore, California 94551**

**UCRL-AR-206769-11**


# First Semester 2011 Compliance Monitoring Report Lawrence Livermore National Laboratory Site 300


**Technical Editors**

**V. Dibley**
**L. Ferry**
**M. Buscheck***

**Contributing Authors**

**A. Anderson***
**T. Carlsen**
**S. Chamberlain**
**S. Gregory**
**R. Goodrich**
**A. Helmig***
**V. Madrid**
**P. McKereghan**
**J. Radyk***
**M. Taffet**
**J. Valett***


## September 30, 2011


*Weiss Associates, Emeryville, California



## Environmental Restoration Department

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# Lawrence Livermore National Laboratory
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| **A. Helmig*** | |

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# Errata

The following sections from the Annual 2010 Compliance Monitoring Plan have been modified:

2.2.3.3. Building 834 OU Remediation Optimization Evaluation

2.2.3.4. T2 Treatability Study

2.2.3.5. Building 834 OU Remedy Performance Issues

# Attachments

# Acknowledgements

Many people support the Lawrence Livermore National Laboratory Site 300 Environmental Restoration Project. The dedication and diverse skills of all these individuals have contributed to the ongoing success of the Environmental Restoration Department activities. The editors wish to collectively thank all the contributing people and companies.

# 1. Introduction

This Compliance Monitoring Report (CMR) summarizes the Lawrence Livermore National Laboratory (LLNL) Site 300 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Action compliance monitoring activities performed during January through June 2011. The report is submitted in compliance with the Compliance Monitoring Plan (CMP)/Contingency Plan (CP) for Environmental Restoration at Lawrence Livermore National Laboratory Site 300 (Dibley et al., 2009). The Eastern GSA post-shutdown monitoring requirements (Holtzapple, 2007) are also included in this report.

During the reporting period of January through June 2011, 5.1 million gallons of ground water and 8.5 million cubic feet of soil vapor were treated at Site 300, removing approximately 4 kilograms (kg) of volatile organic compounds (VOCs), 55 grams (g) of perchlorate, 680 kg of nitrate, 49 g of Research Department Explosive (RDX), 0.6 g of a mixture of tetrabutyl orthosilicate (TBOS) and tetrakis (2-ethylbutyl) silane (TKEBS) and 2.2 g of total uranium (Table Summ-1).

Since remediation began in 1991, approximately 390 million gallons of ground water and over 582 million cubic feet of soil vapor have been treated, removing approximately 550 kg of VOCs, 1 kg of perchlorate 10,000 kg of nitrate, 1.5 kg of RDX, 9.5 kg of TBOS/TKEBs, and 9.9 g of total uranium (Table Summ-2).

# 2. Extraction and Treatment System Monitoring and Ground and Surface Water Monitoring Programs

Section 2 presents the monitoring results for the Site 300 remediation systems, ground water monitoring network, and surface water sampling and analyses. These results are presented and discussed by operable unit (OU) as follows:

2.1. General Services Area OU 1

2.2. Building 834 OU 2

2.3. Pit 6 Landfill OU 3

2.4. High Explosive Process Area (HEPA) OU 4

2.5. Building 850/Pit 7 Complex OU 5

2.6. Building 854 OU 6

2.7. Building 832 Canyon OU 7

2.8. Site-Wide OU 8 (Building 833, Building 801/Pit 8, Building 845/Pit 9, and Building 851)

The locations of the Site 300 OUs 2 through 8 are shown on Figure 2-1. The Pit 2, 8, and 9 Landfills (OU 8) are discussed in Section 3.

In accordance with the revised 2009 CMP/CP requirements, post-only concentration maps and isoconcentration contour maps depicting primary and secondary COC data will be presented in the annual CMR report along with hydraulic capture zones for all HSUs.

Treatment facility operations and maintenance issues that occurred during the first semester 2011 and influent and effluent analytical data collected during the first semester 2011 are included in this report. Treatment facility pH data collected during the first semester 2011 are presented in Appendix A. Ground and surface water monitoring analytical data and ground water elevation measurements for the entire calendar year 2011 will be presented in the annual report. Analytical data from the analysis of soil samples (if collected) will be presented in the annual report.

The Building 834 T2 Area *in situ* bioremediation data is included in Appendix B.

## 2.1. General Services Area (GSA) OU 1

The GSA OU consists of the Eastern and Central GSA areas.

The source of contamination in the Eastern GSA is an abandoned debris burial trench that received craft shop debris. Leaching of solvents in the debris resulted in the release of contaminants to ground water.

A ground water extraction and treatment system (GWTS) operated in the Eastern GSA from 1991 to 2007 to remove VOCs from ground water. VOC-contaminated ground water was extracted from three wells (W-26R-03, W-25N01, and W-25N-24), located downgradient from the debris burial trenches, at a combined flow rate of 45 gallons per minute (gpm). The extracted ground water was treated in three 1,000-pound (lb) granular activated carbon (GAC) units that removed VOCs through adsorption. The treated effluent water was discharged to nearby Corral Hollow Creek.

Remediation efforts in the Eastern GSA have successfully reduced concentrations of TCE and other VOCs in ground water to below their respective cleanup standards set in the GSA Record of Decision (ROD) (United States [U.S.] Department of Energy [DOE], 1997). The Eastern GSA ground water extraction and treatment system was shut off on February 15, 2007 with the U.S. Environmental Protection Agency (EPA), Regional Water Quality Control Board (RWQCB), and California Department of Toxic Substances Control (DTSC) approval. As required by the GSA ROD, ground water monitoring will be conducted for five years after shutdown to determine if VOC concentrations rise or "rebound" above cleanup standards. With one exception described in subsection 2.1.3.3 below, VOC concentrations remain below their cleanup standards.

A map of the Eastern GSA, showing the locations of monitoring and extraction wells and the treatment facility is presented on Figure 2.1-1.

At the Central GSA, chlorinated solvents, mainly trichloroethylene (TCE), were used as degreasing agents in craft shops, such as Building 875. Rinse water from these degreasing operations was disposed of in dry wells. Typically, dry wells were gravel-filled holes about three to four feet (ft) deep and two ft in diameter. The Central GSA dry wells were used until 1982. In 1983 and 1984, these dry wells were decommissioned and excavated.

The Central GSA GWTS has been operating since 1992 removing VOCs from ground water. Contaminated ground water is extracted from eight wells (W-7I, W-875-07, W-875-08, W-873-07, W-872-02, W-7O, W-7P, and W-7R) at an approximate combined flow rate of approximately 2.0 to 3.0 gpm. The Central GSA GWTS began receiving partially treated water from the Building 830-Distal South (830-DISS) facility at the end of the first semester 2007, increasing the flow rate to approximately 5.0 to 6.0 gpm. The current GWTS configuration includes particulate filtration, air stripping to remove VOCs from extracted water, and GAC to treat vapor effluent from the air stripper. Treated ground water is discharged to the surrounding natural vegetation using misting towers. Treated vapors are discharged to the atmosphere under permit from the San Joaquin Valley Unified Air Pollution Control District.

The Central GSA soil vapor extraction and treatment system (SVTS) began operation in the GSA adjacent to the Building 875 dry well contaminant source area in 1994 removing VOCs from soil vapor. Soil vapor is extracted from wells W-875-07, W-875-08, W-7I, and at a total flow rate of approximately 35 standard cubic feet per minute (scfm). Simultaneous ground water extraction in the vicinity lowers the elevation of the water table and maximizes the volume of unsaturated soil influenced by vapor extraction. The current SVTS configuration includes a water knockout chamber, a rotary vane blower, and four 140-lb vapor-phase GAC columns arranged in series. Treated vapors are discharged to the atmosphere under a regulatory permit from the San Joaquin Valley Unified Air Pollution Control District.

A map of the Central GSA, showing the locations of monitoring and extraction wells and treatment facilities is presented on Figure 2.1-2.

### 2.1.1. GSA Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; receiving water monitoring; compliance summary; and sampling plan evaluation and modifications. As discussed above, the Eastern GSA GWTS has been shut down since February 15, 2007. Therefore, only the Central GSA treatment system operations and monitoring information and data are presented and discussed in this section.

#### *2.1.1.1. GSA Facility Performance Assessment*

The monthly ground water and soil vapor discharge volumes and rates and operational hours are summarized in Table 2.1-1. The total volume of ground water and vapor extracted and treated and masses removed during the reporting period is presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples are shown in Table 2.1-2. The pH measurement results are presented in Appendix A.

#### *2.1.1.2. GSA Operations and Maintenance Issues*

The following maintenance and operational issues interrupted continuous operations of the Central GSA GWTS and SVTS during the reporting period:

- The GWTS air compressor seized on December 20. All extraction wells except W-7O were shut down. The compressor was changed on January 27. Compressor hookup and testing was completed on February 2 and the offline extraction wells were restarted on February 3.
- The SVTS was shut down November 22, 2010 through March 28, 2011. The SVTS was initially shut down due to condensate buildup that occurs during the winter months to protect against damage caused by freezing temperatures and remained off while the knock-out drum was replaced. The SVTS was restarted extracting from wells W-875-07 and W-7I on March 28. The piping, deck access, and enclosures for extraction wells W-875-08, W-875-09, W-875-10, W-875-11, and W-875-15 were modified on March 29, and extraction from these wells started on April 4.
- Extraction well W-7P was shut down on February 22 to prevent freeze damage and remained offline due to lack of water until April 11.
- Extraction well W-7O was shut down from April 18-19 to install a new pump. The pump stopped working on June 22 and was sent to the factory for repair on June 28.

#### *2.1.1.3. GSA Compliance Summary*

The Central GSA GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge during the first semester 2011. The Central GSA SVTS system operated in compliance with San Joaquin Valley Unified Air Pollution Control District permit limitations.

#### *2.1.1.4. GSA Facility Sampling Plan Evaluation and Modifications*

The Central GSA treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The treatment facility sampling and analysis plan is presented in Table 2.1-3. No modifications were made to the plan during this reporting period.

#### *2.1.1.5. GSA Treatment Facility and Extraction Wellfield Modifications*

No modifications were made to the CGSA GWTS, SVTS, or the extraction wellfield during this reporting period.

### 2.1.2. GSA Surface Water and Ground Water Monitoring

The sampling and analysis plans for ground water monitoring at the Central and Eastern GSA are presented in Tables 2.1-4 and 2.1-5, respectively. These tables also delineate and explain deviations from the sampling plan and indicate any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the Eastern GSA post-shutdown monitoring requirements with the following exceptions: two required analyses were not performed due to inoperable pumps and two required analyses were not performed because personnel could not sample the wells due to access restrictions. During the reporting period, ground water monitoring was conducted in accordance with the Central GSA CMP monitoring requirements with the following exceptions; four required analyses were not performed due to inoperable pumps, three required analyses were not performed because there was insufficient water in the wells to collect the samples, and one required analysis was not performed due to unsafe conditions at the well.

### 2.1.3. GSA Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

#### *2.1.3.1. GSA Mass Removal*

The monthly ground water and soil vapor mass removal estimates are summarized in Table 2.1-6. The total mass removed during this reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

#### *2.1.3.2. GSA Contaminant Concentrations and Distribution*

The COCs in GSA ground water consist of the following VOCs: TCE, tetrachloroethene (PCE) 1,1-dichloroethane (DCA), 1,2-DCA, 1,1-dichloroethene (DCE), 1,2-DCE, 1,1,1-trichloroethane (TCA), bromodichloromethane, chloroform, and trichlorotrifluoroethane (Freon 11). TCE is the most prevalent VOC in GSA ground water, comprising 85-95% of the total VOCs detected.

Since extraction and treatment began at the Eastern GSA in 1991, TCE concentrations in ground water have decreased from a historic maximum of 74 micrograms per liter (µg/L) (W-26R-03, January 1992) to below its reporting limit (0.5 µg/L) in the majority of wells and to below the 5 µg/L cleanup standard for TCE in all wells. Within the Qal-$Tnbs_1$ hydrostratigraphic units (HSU), total VOC concentrations detected in samples during first semester 2011 ranged from 3.9 µg/L (W-26R-04, June) to <0.5 µg/L. TCE is the only VOC currently detected in Eastern GSA ground water with the exception of 0.5 µg/L of PCE detected in well W-26R-06. The first semester 2011 data indicate that TCE and other VOCs have not rebounded significantly and, with one exception described in subsection 2.1.3.3 below, continue to remain below their cleanup standards in all wells since the Eastern GSA GWTS was shutdown in February 2007.

VOCs are the only COCs in ground water and soil vapor at the Central GSA. There are three primary HSUs in the Central GSA:

- Qt-$Tnsc_1$ HSU, a shallow water bearing zone in the western portion of the Central GSA. This HSU includes saturated Qt deposits, and the $Tnbs_2$ sandstone and $Tnsc_1$ siltstone/claystone bedrock units that subcrop beneath the Qt.
- $Tnbs_1$ HSU, a deeper regional aquifer within the western portion of the Central GSA which consists of $Tnbs_1$ sandstone bedrock.
- Qal-$Tnbs_1$ HSU, a shallow water bearing zone within the eastern portion of the Central GSA. In the eastern portion of the Central GSA (near the sewage treatment pond), Qt deposits and the $Tnbs_2$ and $Tnsc_1$ bedrock units are not present. Qal deposits directly overlie the shallow $Tnbs_1$ bedrock that comprises the Qal-$Tnbs_1$ HSU in this area.

A VOC plume exists within the Qt-$Tnsc_1$ and Qal-$Tnbs_1$ HSUs in the Central GSA. Prior to remediation, the maximum total VOC concentration detected in Central GSA ground water was 272,000 µg/L (875 dry well pad area well W-875-07, 1992). The maximum total VOC concentrations detected during first semester 2011 was 1,162 µg/L (875 dry well pad area well W-875-08, March). While the majority of VOCs detected in the sample from this and other 875 dry well pad area wells consists of TCE, other VOCs detected in these wells include PCE, 1,2-DCE, 1,1-DCE, 1,1-DCA, 1,2-DCA, 1,1,2-TCA, and chloroform. The maximum total VOC ground water concentration continues to occur in the 875 dry well pad area. During first semester 2011, total VOCs were detected in only one offsite monitor well W-35A-10 at a concentration of 25.6 µg/L, that consisted of TCE at a concentration of 19 µg/L and Freon 11 at a concentration of 6.6 µg/L. However, a ground water sample could not be collected from offsite well W-35A-01 during the first semester 2011. A sample collected from this well in 2010 contained 65 µg/L total VOCs, most of which consisted of TCE but also included minor amounts of PCE, 1,1-DCE, and Freon 11.

VOCs were not detected in ground water samples from wells in the deeper $Tnbs_1$ HSU. TCE soil vapor concentrations ranged from 0.099 to 72 parts per million on a volume per volume basis ($ppm_{v/v}$) during first semester 2011. These TCE concentrations have decreased significantly from the historic maximum TCE vapor concentration of 600 $ppm_{v/v}$ at SVTS startup, in 1994.

#### *2.1.3.3. GSA Remediation Optimization Evaluation*

By 2007, ground water extraction and treatment had reduced VOC concentrations in all Eastern GSA wells to below the GSA ROD ground water cleanup standards and TCE concentrations to below the reporting limit (0.5 µg/L) in the majority of wells. In January 2007, DOE/LLNL proposed to initiate the "Requirements for Closeout" described in the Remedial Design document for the GSA OU (Rueth et al., 1998). These requirements specify: *when VOC concentrations in ground water have been reduced to cleanup standards, the ground water extraction and treatment system will be shut off and placed on standby*. The U.S. EPA, RWQCB, and DTSC approved this proposal and the Eastern GSA ground water extraction and treatment system was turned off and effluent discharge to Corral Hollow Creek was discontinued on February 15, 2007, thereby meeting the Substantive Requirements. As required by the GSA ROD, ground water monitoring is being conducted to determine if VOC concentrations rebound above cleanup standards. By the end of 2010, TCE had been detected only once above cleanup standards (6.9 µg/L in well W-26R-01, in May 2009). As described in the first semester 2009 CMR, this well and nearby well W-26R-04 were re-sampled in June 2009 with no TCE detections above the cleanup standard. These results were discussed with the U.S. EPA, DTSC, and RWQCB at the July 8, 2009 Remedial Project Managers (RPM) Meeting. The regulatory agencies concurred with continued monitoring and evaluation of TCE concentrations in Eastern GSA wells to determine if TCE concentrations are rebounding. As mentioned in the previous subsection, TCE concentrations were below the 5 µg/L cleanup standard for all Eastern GSA ground water samples collected during first semester 2011.

At the Central GSA, ground water extraction continues to adequately capture the highest concentrations in ground water. During first semester 2011, extraction well W-7R removed most of the ground water, while wells W-875-07, W-875-08, and W-7O removed most of the dissolved VOC mass. Total VOC concentrations within the northern plume area (in the vicinity of W-889-01) remained stable and a ground water extraction well (W-CGSA-2708) was installed in this area during first semester 2011. The borehole for this well was drilled to 70 ft below ground surface (bgs) and the well (8-in diameter Schedule 80 PVC) was screened at approximately the same interval as nearby well W-889-01 from 40 to 55 ft bgs in the $Tnsc_{1b}$ (sandy siltstone) portion of the Qt-$Tnsc_1$ HSU. Water was encountered during drilling at 40.7 ft bgs. This well will be added to the Central GSA sampling and analysis plan (Table 2.1-4) after final well development and baseline sampling are completed during second semester 2011 with results reported in the 2011 Annual CMR. The overall decline in VOCs within the Qt-$Tnsc_1$ and Qal-$Tnbs_1$ HSUs and the absence of VOCs in the deeper $Tnbs_1$ HSU, demonstrates the efficacy of ongoing cleanup operations at the Central GSA.

Significantly more VOC mass is being removed by soil vapor extraction than by ground water extraction. During first semester 2011, 0.23 kg of VOCs were removed from ground water, whereas 0.95 kg of VOCs were removed from vapor. Based on individual well vapor flow monitoring for first semester 2011, SVE wells W-7I, W-875-07, and W-875-08 removed most of the vapor mass. The SVE wellfield configuration will continue to be monitored and evaluated.

#### *2.1.3.4. GSA OU Remedy Performance Issues*

There were no new issues that affect the performance of the cleanup remedy for the GSA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

## 2.2. Building 834 OU 2

The Building 834 Complex has been used to test the stability of weapons and weapon components under various environmental conditions since the 1950s. Past spills and piping leaks at the Building 834 Complex have resulted in soil and ground water contamination with VOCs and TBOS/TKEBs. Nitrate concentrations in Building 834 ground water that exceed the cleanup standard (45 milligrams per liter [mg/L]) are likely the result of a combination of natural sources and septic system leachate. In addition, a former underground diesel storage tank released diesel to the subsurface.

The Building 834 OU is informally divided into three areas: the core, leachfield (septic system), and distal areas (Figure 2.2-1). The core area generally refers to the vicinity of the buildings and test cells in the center of the Building 834 Complex where the majority of contaminant releases occurred. The leachfield area is located immediately southwest of the core area. The distal (T2) area refers to the area downgradient (south) of the core and leachfield areas. A map of Building 834 OU showing the locations of monitoring and extraction wells and treatment facilities is presented on Figure 2.2-1.

The Building 834 GWTS and SVTS began operation in 1995 and 1998, respectively. These systems are located in the Building 834 core area. The GWTS removes VOCs and TBOS/TKEBs from ground water within the Tpsg HSU and the SVTS removes VOCs from soil vapor. Due to the very low ground water yield from individual ground water extraction wells (<0.1 gpm), the GWTS and SVTS have been operated simultaneously in batch mode. Although the GWTS can be operated alone, the SVTS is not operational without ground water extraction due to the upconing of the ground water in the well that covers the well screen and prevents soil vapor flow.

The current extraction wellfield consists of 13 dual extraction wells for both ground water and soil vapor. Ten extraction wells (W-834-B2, -B3, -D4, -D5, -D6, -D7, -D12, -D13, -J1, and -2001) are located within the core area and three (W-834-S1, -S12A, and -S13) in the leachfield area. Extraction well W-834-D5 is connected to the facility but has not been used for extraction since the facility was restarted in October 2004 because the capture area is similar to the capture area of extraction well W-834-D13. Ground water and soil vapor extraction well W-834-2001 was added to the system in March 2007. Extracted ground water from this well contains dissolved-phase diesel related to the former underground diesel storage tank. The GWTS extracts ground water at an approximate combined flow rate of 0.23 gpm and the SVTS extracts soil vapor at a combined flow rate of approximately 103 scfm. The current GWTS configuration includes floating hydrocarbon adsorption devices to remove the floating silicon oil, TBOS/TKEBs, and floating diesel (if any), followed by aqueous-phase GAC to remove VOCs, dissolved-phase TBOS/TKEBs, and diesel from ground water. Nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses. The current SVTS configuration includes vapor-phase GAC for VOC removal. Treated vapors are discharged to the atmosphere under an air permit issued by the San Joaquin Valley Unified Air Pollution Control District.

### 2.2.1. Building 834 OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modification.

#### *2.2.1.1. Building 834 OU Facility Performance Assessment*

The monthly ground water and soil vapor discharge volumes and rates and operational hours are summarized in Table 2.2-1. The total volumes of ground water and vapor extracted and treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples are shown in Tables 2.2-2 through 2.2-4. The pH measurement results are presented in Appendix A.

#### *2.2.1.2. Building 834 OU Operations and Maintenance Issues*

The following maintenance and operational issues interrupted continuous operations of the Building 834 GWTS and SVTS during the reporting period:

- The SVTS was shut down on November 16 due to a failed blower. The blower was replaced, a vibration dampener was installed, interlock checks were performed, and the SVTS was restarted on April 11.
- The GWTS was shut down from November 23 to February 9 and February 22 to March 14 to prevent damage from freezing temperatures.
- The GWTS and SVTS shut down intermittently in April and May due to the compressor shutting off. Corrective actions were implemented including replacing the breaker and changing the lower pressure start point for the compressor to allow the breaker to cool once it reaches the upper set point. The influent transfer tank level switches were causing the pump to start and stop frequently. The switches were cleaned to remove calcium buildup. The system was extracting from core area wells while the cause of the compressor shut downs was investigated. The systems were shut down on May 25 for the remainder of the reporting period. The compressor will be rebuilt next semester.

#### *2.2.1.3. Building 834 OU Compliance Summary*

The Building 834 GWTS operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. The Building 834 SVTS operated in compliance with the San Joaquin Valley Unified Air Pollution Control District permit limitations.

#### *2.2.1.4. Building 834 OU Facility Sampling Plan Evaluation and Modifications*

The Building 834 treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.2-5. No modifications were made to the plan during this reporting period.

#### *2.2.1.5. Building 834 OU Treatment Facility and Extraction Wellfield Modifications*

No modifications to the treatment facility or to the extraction wellfield occurred during this reporting period.

### 2.2.2. Building 834 OU Ground Water Monitoring

The sampling and analysis plan for ground water monitoring is presented in Table 2.2-6. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During this reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; seventy-six required analyses were not performed because there was insufficient water in the wells to collect the samples.

### 2.2.3. Building 834 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal, analysis of contaminant distribution and concentration trends, remediation optimization evaluation, and performance issues.

#### *2.2.3.1. Building 834 OU Mass Removal*

The monthly ground water and soil vapor mass removal estimates are summarized in Table 2.2-7. The total mass removed during this reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

#### *2.2.3.2. Building 834 OU Contaminant Concentrations and Distribution*

At the Building 834 OU, VOCs (primarily TCE, but also including PCE, cis-1,2-DCE, 1,1,-TCA, and chloroform) are the primary COCs detected in ground water; TBOS/TKEBs and nitrate are the secondary COCs. These COCs have been identified in two shallow HSUs: 1) the Tpsg perched water-bearing gravel zone, and 2) the underlying Tps-$Tnsc_2$ perching horizon.

##### *2.2.3.2.1. VOCs Concentrations and Distribution*

While the overall extent of total VOCs in the Building 834 OU ground water and soil vapor has not changed significantly, the maximum concentrations have decreased by more than one order-of-magnitude since remediation began in the mid 1990s.

TCE has decreased from a historical maximum concentration of 800,000 μg/L (W-834-D3 in 1993) to a first semester 2011 maximum of 17,000 μg/L (W-834-D13, April). Cis-1,2-DCE has decreased from a historical maximum concentration of 540,000 μg/L (W-834-D4, 1990) to a current maximum of 19,000 μg/L (W-834-D4, March). PCE has decreased from a historical maximum concentration of 10,000 μg/L (W-834-D3, 1993) to a current maximum concentration of 150 μg/L (W-834-D13, March). 1,1,1-TCA has decreased from a historical maximum concentration of 33,000 μg/L (W-834-J1,

1991) to a current concentration of below the 0.5 µg/L reporting limit. Chloroform has decreased from a historical maximum concentration of 950 µg/L (W-834-S1, 1989) to a current maximum concentration of 1.5 µg/L (W-834-D6, March), below the cleanup standard (state and federal MCL for total trihalomethanes [THMs]) of 80 µg/L.

The highest total VOC concentrations in ground water continue to be detected in the 834 core area. Active remediation has reduced total VOC ground water concentrations in the more permeable Tpsg HSU from a pre-remediation maximum of 1,060,000 µg/L (W-834-D3, 1993) to a first semester 2011 maximum concentration of 19,000 µg/L (W-834-D4, March). The underlying Tps-Tnsc$_2$ HSU continues to exhibit the highest total VOC ground water concentrations in the Building 834 OU and Site 300, at 210,000 µg/L (W-834-A1, February). Total VOCs in ground water in well W-834-A1 have remained stable since this well began monitoring the Tps-Tnsc$_2$ HSU in 2000. Another monitor well screened in the Tps-Tnsc$_2$ HSU, W-834-U1, exhibited 48,000 µg/L total VOCs in first semester 2011 and has generally shown decreasing VOC concentrations since 2000.

TCE soil vapor concentrations from the core area SVE wells ranged from 0.021 to 30 ppm$_{v/v}$ during first semester 2011. These TCE vapor concentrations have decreased by two orders-of-magnitude from the maximum pre-remediation core area concentration of 3,200 ppm$_{v/v}$ (W-834-D4, 1989). Well W-834-D4 is located approximately 10 ft from well W-834-D3, which yielded the aforementioned historic maximum ground water total VOC concentration in the Tpsg HSU.

In the leachfield area, total VOCs in the Tpsg HSU have decreased by approximately an order-of-magnitude, from a pre-remediation maximum of 179,200 µg/L (W-834-S1, 1988) to a first semester 2011 maximum concentration of 12,000 µg/L (W-834-2113, February). Total VOCs in the underlying Tps-Tnsc$_2$ HSU in the leachfield area are significantly lower than in the core area. The first semester 2011 maximum total VOC concentration in Tps-Tnsc$_2$ HSU ground water was 2,800 µg/L (W-834-S8, February) in the leachfield area. This HSU has exhibited decreasing or stable VOC trends since monitoring began in 1989. During first semester 2011, TCE soil vapor concentrations from the Tpsg HSU in the leachfield area ranged from 1.1 to 5.6 ppm$_{v/v}$, significantly lower than the 710 ppm$_{v/v}$ maximum pre-remediation concentration measured in 2004.

In the distal area, total VOC concentrations in the Tpsg HSU have decreased from a historic maximum of 86,000 µg/L (W-834-T2A, 1988) to a first semester 2011 maximum of 11,000 µg/L (W-834-T2A, February). The underlying Tps-Tnsc$_2$ HSU is monitored by one well, W-834-2119, which contained a first semester 2011 maximum total VOC concentration of 11,000 µg/L (February); historic total VOC concentrations in this well have not changed significantly.

#### *2.2.3.2.2. TBOS/TKEBS Concentrations and Distribution*

TBOS/TKEBS has decreased from a historic maximum of 7,300,000 µg/L (W-834-D3, 1995) to a first semester 2011 maximum of 4,800 µg/L (W-834-D3, February). This compound is found exclusively in the core area. TBOS/TKEBS concentrations vary from one sampling event to the next, likely due to varying amounts of free-phase TBOS/TKEBS in the subsurface. Historically, floating product has been measured intermittently in some core area wells; however, no floating product was observed during first semester 2011. Because TBOS/TKEBS concentrations in Tpsg HSU wells in the leachfield and distal areas have historically been below reporting limits, sampling for TBOS/TKEBS in the leachfield and distal areas under the new CMP was changed to biennial frequency, with approximately half the wells to be sampled during even numbered years and half to be sampled during odd numbered years. TBOS/TKEBS concentrations were below reporting limits in those leachfield and distal area wells sampled during first semester 2011.

Both the concentration and extent of TBOS/TKEBS in ground water are greater in the Tpsg HSU than in the underlying Tps-Tnsc$_2$ HSU perched horizon. During first semester 2011, TBOS/TKEBS was detected in the Tps-Tnsc$_2$ HSU at a maximum concentration of 24 µg/L (W-834-U1, February). TBOS/TKEBS continues to be below its reporting limit in guard wells W-834-T1 and W-834-T3.

***2.2.3.2.3. Nitrate Concentrations and Distribution***

During first semester 2011, nitrate was detected in ground water at concentrations exceeding the 45 mg/L cleanup standard in the Building 834 core, leachfield, and distal areas in the Tpsg and Tps-Tnsc$_2$ HSUs. Nitrate in Tpsg HSU ground water ranged from a maximum of 300 mg/L (W-834-M1, February) to below the 0.5 mg/L reporting limit. In the core area, nitrate in the Tpsg HSU varies spatially and temporally due to denitrification associated with the ongoing intrinsic *in situ* biodegradation of TCE. The introduction of oxygen into the subsurface during SVE operation subdues intrinsic biodegradation and denitrification in some portions of the core area. In the underlying Tps-Tnsc$_2$ HSU, nitrate ranged from a maximum of 100 mg/L (W-834-S8, February) to 0.73 mg/L.

While nitrate has decreased from a historic maximum of 749 mg/L (W-834-K1A, 2000), the continued presence of nitrate above the cleanup standard indicates an ongoing source of nitrate to ground water that is likely a combination of natural and anthropogenic sources. Nitrate was not detected in guard wells W-834-T1 and W-834-T3 during first semester 2011.

***2.2.3.2.4. Other Contaminant Concentrations and Distribution***

The extent of diesel in ground water in the Building 834 area is limited to the vicinity of a former underground storage tank located beneath the paved portion of the core area. During first semester 2011, diesel concentrations were measured in ground water from well W-834-2001 at 480 µg/L (March) and from well W-834-U1 at 290 µg/L and 304 µg/L (February). Diesel concentrations measured in ground water vary from one sampling event to the next, likely due to varying amounts of free-phase product in the subsurface. No floating product or diesel odor was detected in ground water during first semester 2011.

During first semester 2011, perchlorate was detected in ground water from well W-834-2118 at a concentration of 4.9 µg/L (February); slightly above the 4 µg/L detection limit but below the 6 µg/L cleanup standard. Perchlorate concentrations in this well have decreased from a historic maximum of 11 µg/L in 2005. During first semester 2011, attempts to sample ground water for perchlorate from wells W-834-S7 and W-834-A2 were unsuccessful due to insufficient water. Ground water from W-834-S7 has historic perchlorate concentrations ranging from 8.8 to 11 µg/L; ground water from W-834-A2 has not been analyzed for perchlorate. Semi-annual ground water monitoring for perchlorate will continue for wells W-834-2118 and W-834-S7 and annually for well W-834-A2.

***2.2.3.3. Building 834 OU Remediation Optimization Evaluation***

Throughout first semester 2011, dual extraction and treatment operated intermittently as described in Section 2.2.1.2 above. During first semester 2011, no modifications were made to the core or leachfield area extraction wellfields. Substantially more VOC mass is being removed by soil vapor extraction than by ground water extraction. Of the 1.8 kg of VOCs removed during first semester 2011, 1.46 kg was removed in the vapor phase.

TCE biodegradation continues within the core area where significant amounts of TBOS/TKEBS are present and serve as an electron donor for intrinsic *in situ* biodegradation. Historically, the primary byproduct of this biodegradation has been cis-1,2-dichloroethene (DCE), although limited vinyl chloride has also been detected. In first semester 2011, both cis-1,2-DCE and vinyl chloride were detected in core area ground water, at maximum concentrations of 19,000 µg/L and 149 µg/L, respectively. Overall mass removal performance during periodic extraction wellfield shutdowns will be assessed to monitor changes in oxidation reduction (redox) conditions, accumulation of cis-1,2-DCE, and the fate of DCE after vapor extraction re-start.

The extraction wellfield for the Tpsg HSU within the core area continues to adequately capture the highest VOC concentrations in ground water. In the leachfield area, the extraction wells were off during the time of first semester 2011 routine water level measurements. Historically, the leachfield extractions wells have captured portions of the VOCs in ground water; however, the highest concentrations (in the vicinity of monitor well W-834-2113) have not been fully captured.

Enhanced *in situ* bioremediation is being evaluated as a long-term treatability test described in Section 2.2.3.4. The total VOC concentrations in the area impacted by the bioremediation experiment have decreased significantly due to a combination of *in situ* biostimulation, bioaugmentation, and dilution.

Total VOC concentration trends in the underlying Tps-$Tnsc_2$ HSU will continue to be monitored closely to evaluate whether there are any beneficial impacts from active remediation of the overlying Tpsg HSU. If concentrations remain stable or increase, extraction from this HSU may be considered.

Total VOCs and their extent in ground water are expected to continue to decrease over time as remediation progresses. The deep regional $Tnbs_1$ aquifer continues to be free of contaminants as demonstrated by quarterly analyses of ground water from guard wells W-834-T1 and W-834-T3, both screened in the lower $Tnbs_1$ HSU.

#### *2.2.3.4. T2 Treatability Study*

Post-test rebound monitoring continued during first semester 2011 for the T2 treatability study, which began in 2005. The primary objective of this pilot-scale treatability test was to assess the performance of enhanced *in situ* bioremediation of TCE at concentrations greater than 10,000 µg/L in a heterogeneous, anisotropic water-bearing zone typical of contaminant source areas at Site 300. Progress of this test has been reported semi-annually in previous CMRs since 2005. A detailed description of the test results, including procedures, performance assessment, conclusions, and recommendations were recently submitted as Appendix A of the Draft Building 834 Five Year Review (Valett et al., 2011).

#### *2.2.3.5. Building 834 OU Remedy Performance Issues*

There were no new issues that affect the performance of the cleanup remedy for the Building 834 OU during this reporting period. Although the remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup in the Tpsg HSU, it has not had significant impact decreasing VOC concentrations in the underlying Tps-$Tnsc_2$ HSU beneath the core area.

## 2.3. Pit 6 Landfill (Pit 6) OU 3

The Pit 6 Landfill covers an area of 2.6 acres near the southern boundary of Site 300. This landfill was used from 1964 to 1973 to bury waste in nine unlined debris trenches and animal pits. The buried waste, which includes laboratory equipment, craft shop debris, and biomedical waste is located on or adjacent to the Corral Hollow-Carnegie Fault. Farther east, the fault trends to the south of two nearby water-supply wells CARNRW1 and CARNRW2. These active water-supply wells are located about 1,000 ft east of the Pit 6 Landfill. They provide water for the nearby Carnegie State Vehicular Recreation Area and are monitored on a monthly basis.

The Pit 6 Landfill was capped and closed in 1997 under CERCLA to prevent further leaching of contaminants resulting from percolation of rainwater through the buried waste. The engineered, multi-layer cap is intended to prevent rainwater infiltration into the landfill, mitigate potential damage by burrowing animals and vegetation, prevent potential hazards from the collapse of void spaces in the buried waste, and prevent the potential flux of VOC vapors through the soil. Surface water flow onto the landfill is minimized by a diversion channel on the north side and drainage channels on the east, west, and south sides of the engineered cap. A map of Pit 6 Landfill OU showing the locations of monitoring and water supply wells is presented on Figure 2.3-1.

### 2.3.1. Pit 6 Landfill OU Surface Water and Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.3-1. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring and post-closure requirements with the following exceptions; thirty-four required analyses were not performed because there was insufficient water in the wells to collect the samples.

### 2.3.2. Pit 6 Landfill OU Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

#### *2.3.2.1. Pit 6 Landfill OU Contaminant Distribution and Concentration*

At the Pit 6 Landfill OU, VOCs and tritium are the primary COCs detected in ground water. Perchlorate and nitrate are secondary COCs. These constituents have historically been identified within the Qt-Tnbs$_1$ HSU. Pit 6 COCs have significantly declined below historic maximum levels.

##### *2.3.2.1.1. VOC Concentrations and Distribution*

The VOC COCs in Pit 6 Landfill ground water include chloroform, 1,2-DCA, cis-1,2-DCE, trans-1,2-DCE, PCE, 1,1,1-TCA, and TCE. Of these VOCs, only TCE and cis-1,2-DCE were detected in Pit 6 Landfill ground water monitor wells at concentrations above the 0.5 µg/L reporting limit during first semester 2011.

In the first semester 2011, TCE was detected in 4 wells (EP6-09, K6-16, K6-18, and K6-19) at concentrations above the reporting limit, but exceeded the 5 µg/L cleanup standard in only one well (EP6-09).

TCE concentrations have decreased from a historic maximum of 250 µg/L (K6-19, 1988) to a first semester 2011 maximum concentration of 9.3 µg/L (EP6-09, April). The historic maximum TCE ground water concentration detected in EP6-09 is 28 µg/L in January 1995. For two months in late 1998, ground water was extracted from EP6-09 to determine the effect on TCE trends. During this period, TCE concentrations decreased from 14 to 1.4 µg/L. Since 1998, TCE concentrations in EP6-09 have rebounded to 10 µg/L and remained relatively stable since then.

During first semester 2011, cis-1,2-DCE was detected in ground water samples from a single Pit 6 Landfill OU well at a maximum concentration of 3.0 µg/L (K6-01S, January); below the 6 µg/L cleanup standard for 1,2-DCE. The presence of cis-1,2-DCE, a degradation product of TCE, suggests that some natural dechlorination may be occurring.

During first semester 2011, VOCs were not detected in samples collected from guard wells W-PIT6-1819, K6-17, K6-22, and K6-34. Bromoform, bromodichloromethane, and dibromochloromethane were detected in samples collected from CARNRW2, a water-supply well for the Carnegie State Vehicular Recreation Area (SVRA) Park during January, February, and March 2011. The total trihalomethane (THM) concentrations for these samples were below the applicable MCL of 80 µg/L. Most likely the trihalomethanes detected in well CARNRW2 are the result of intermittent backflow of chlorinated water from the SVRA chlorination system into the well. No other VOCs were detected in the four CARNRW wells during first semester 2011.

During the first quarter of 2011, acetone was detected in a sample collected from well EP6-09 at a concentrations of 57 µg/L. Between July 2008 and the present, acetone has been detected sporadically in seven routine and two duplicate samples from well EP6-09 at concentrations ranging from 18 to 220 µg/L. Acetone has also been reported in seven discrete one-time samples from seven other wells near Pit 6 at concentrations ranging from 5.4 to 78 µg/L. Of these seven samples, four were collected in late October 1990 and may reflect laboratory contamination. One of the three remaining samples, collected from well K6-01S on February 17, 2008, contained 28 µg/L of acetone. The duplicate sample collected from this well on the same date contained no acetone above the 20 µg/L reporting limit. Of the two other samples, the most recent sample collected contained 78 µg/L of acetone in a sample from well EP6-08 (October 2003). As a result of the acetone detection in well EP6-09 in the first semester of 2011 and sporadic acetone detections in some historical samples, DOE/LLNL collected two ground water samples (a routine and a duplicate sample) from EP6-09 during the second quarter of 2011, with each sample analyzed for acetone at a different laboratory. Acetone was not detected in either samples. However, the trip blank accompanying the routine sample contained acetone at a concentration of 26 µg/L. DOE/LLNL will continue to collect quarterly duplicate samples from well EP6-09 for acetone analysis over the next year to evaluate the possible occurrence of acetone in Pit 6 ground water. There is no State or Federal MCL for acetone, and the concentrations detected are well below the taste and odor threshold for acetone of 300,000 µg/L.

#### *2.3.2.1.2. Tritium Concentrations and Distribution*

Tritium was detected above the 100 picoCuries per liter (pCi/L) background activity in samples from several wells completed in the $Qt\text{-}Tnbs_1$ HSU both north of the fault and within the fault zone. Tritium activities have decreased from a historic maximum of 3,420 pCi/L (BC6-13, 2000) to a first semester 2011 maximum concentration of 403 pCi/L (K6-18, January). The tritium activity in K6-18 exceeded the State Public Health Goal (PHG) (400 pCi/L), however, the duplicate sample result from K6-18 was 186 pCi/L. Tritium has never been detected in Pit 6 Landfill ground water at activities exceeding the 20,000 pCi/L cleanup standard .

During first semester 2011, tritium activities were detected in ground water samples from guard well W-PIT6-1819 ranging from 116 pCi/L (January) to 154 pCi/L (April). Prior to 2011, tritium activities in well W-PIT6-1819 ranged from <100 pCi/L to 295 pCi/L. This well is used to define the downgradient extent of tritium in ground water with activities above the 100 pCi/L background level. It is located approximately 100 ft west of the Site 300 boundary within the Carnegie State Vehicle Recreation Area residence area and about approximately 200 ft west of the CARNRW1 and CARNRW2 water supply wells.

Tritium activities in ground water sampled from the four CARNRW offsite wells during first semester 2011 were below 100 pCi/L in all monthly ground water samples. Based on these analyses and the analytical results from other wells, the tritium plume appears to be relatively stable to declining in extent.

#### *2.3.2.1.3. Perchlorate Concentrations and Distribution*

During first semester 2011, perchlorate was not detected at or above the 4 µg/L reporting limit in any Pit 6 Landfill OU ground water samples, including samples collected from guard wells and the CARNRW water supply wells. Perchlorate concentrations in ground water have steadily decreased from a historic maximum concentration of 65.2 µg/L in a sample collected from well K6-19 in 1998 to below the 4 µg/L reporting limit in all wells.

#### *2.3.2.1.4. Nitrate Concentrations and Distribution*

During first semester 2011, nitrate was detected in samples collected from wells completed within the $Qt\text{-}Tnbs_1$ HSU, within and north of the fault zone. Nitrate was detected in ground water above the

45 mg/L cleanup standard in two Pit 6 Landfill OU wells (K6-23 and K6-24). In January 2011, ground water from wells K6-23 and K6-24 contained nitrate concentrations of 130 and 62 mg/L, respectively. Well K6-23 consistently yields ground water nitrate concentrations in excess of the nitrate cleanup standard and is located in close proximity to the Building 899 septic system, which may be a potential source of the nitrate at this location. Well K6-24 has historically yielded nitrate concentrations less than 45 mg/L, and was therefore resampled in April 2011, with nitrate detected at 63 mg/L. The source of the high nitrate concentrations in the vicinity of K6-24 is currently unknown. Nitrate will continue to be closely monitored in this well.

Nitrate was not detected above the 0.5 mg/L reporting limit in any of the monthly ground water samples collected during first semester 2011 from water-supply well CARNRW1.

#### *2.3.2.1.5. Status of Uranium Statistical Limit Exceedence at Well EP6-08*

When sufficient ground water is available, samples from the six detection monitor wells at Pit 6 (EP6-06, EP6-08, EP6-09, K6-01S, K6-19, and K6-36) are collected and analyzed quarterly for total uranium by alpha spectrometry as part of the surveillance monitoring performed by the LLNL Water Guidance and Monitoring Group (WGMG). The resulting data are compared to Statistical Limits for each respective well. The Statistical Limits are calculated based on a statistical analysis of the historic uranium data for each well and are meant to define evidence of a potential release of the chemical from the landfill. These data and the corresponding comparison to the Statistical Limits are documented in the quarterly Pit 6 Post-Closure Monitoring Reports.

During January 2008, total uranium in a ground water sample from well EP6-08 exceeded its 1.5 pCi/L Statistical Limit with an initial activity of 2.8 pCi/L. As required by regulation, a 7-day letter indicating Statistically Significant Evidence of Release from the landfill was submitted to the RWQCB (Jackson, 2008) and the responsibility for determining if an actual release of uranium from Pit 6 had occurred was transferred to CERCLA investigations (Blake and Taffet, 2008a). Well EP6-08 was re-sampled twice later in January 2008 revealing uranium activities of 2.1 and 2.6 pCi/L. In April 2008, samples collected from EP6-08 were analyzed for uranium by mass and alpha spectrometry. The mass spectrometry sample yielded a uranium-235/uranium-238 ($^{235}U/^{238}U$) atom ratio indicative of natural uranium (0.0072) and a total activity of 3 pCi/L (Blake and Taffet, 2008b). The alpha spectrometry sample yielded 2.2 pCi/L uranium. Although continued analysis of uranium samples was planned for well EP6-08, the well went dry after the April 2008 sampling episode and subsequent sampling has not been possible. LLNL will continue to attempt to collect samples from well EP6-08 every quarter. When sufficient water becomes available due to rising ground water levels, additional ground water samples will be collected for uranium analysis.

At present, the water table north of the fault zone has declined so that several monitor wells are dry or cannot yield sufficient water for sampling. When sufficient water has been available, samples from the other five monitor wells at Pit 6 have continued to yield total uranium activities below their respective Statistical Limit for total uranium. During the first semester 2011, sufficient water to collect ground water samples for alpha spectrometric analysis of uranium was available from detection monitor wells EP6-06, EP6-09, K6-01S, and K6-19, yielding maximum total uranium activities of 0.59, 2.6, 3.6, and 3.0 pCi/L, respectively. All these uranium activities are below the Statistical Limits for each respective well.

Although total uranium activities in samples from well EP6-08 were increasing slightly in the months leading up to the well going dry, all historic uranium data collected in the Pit 6 area are well below the 20 pCi/L uranium cleanup standard, have a $^{235}U/^{238}U$ atom ratio indicative of natural uranium (for all mass spectrometric analyses), and are well within the range of natural background levels for uranium. Therefore, these uranium activities do not indicate a release of uranium from the landfill.

Once water levels rise, samples for uranium analysis will be collected from all of the performance monitor wells at Pit 6 to supplement the 2008-present monitoring data.

#### *2.3.2.2. Pit 6 Landfill OU Remediation Optimization Evaluation*

The remedy for tritium and VOCs in ground water at the Pit 6 Landfill is Monitored Natural Attenuation (MNA). Ground water levels and contaminants are monitored on a regular basis to: (1) evaluate the efficacy of the natural attenuation remedy in reducing contaminant concentrations, and (2) detect any new chemical releases from the landfill. In general, the primary ground water COCs at the Pit 6 Landfill OU exhibit stable to decreasing trends and ground water levels beneath the landfill remain well below the buried waste. Tritium activities in ground water continue to decrease toward background levels and remain far below the 20,000 pCi/L cleanup standard. Tritium activities exceeded the 400 pCi/L PHG in one well (K6-18), although the duplicate sample was below the PHG. TCE concentrations in ground water remain above the 5 µg/L cleanup standard in samples from only one well (9.3 µg/L, EP6-09). The concentrations of other VOC COCs are below their cleanup standards in all Pit 6 Landfill ground water monitor wells; and only cis-1,2-DCE is detected above the 0.5 µg/L reporting limit in a single well. The concentrations and extent of total VOCs in ground water are declining from the historical maximum of 250 µg/L.

There has been a decline in perchlorate concentrations in Pit 6 area ground water from a maximum of 65.2 µg/L, measured in 1998. During first semester 2011, perchlorate was not detected in ground water above the reporting limit (4 µg/L) in samples from Pit 6 wells. Nitrate continues to be detected above the 45 mg/L cleanup standard in well K6-23. Also during first semester 2011, nitrate was detected for the first time above the 45 mg/L cleanup standard in well K6-24.

#### *2.3.2.3. Pit 6 Landfill OU Performance Issues*

Low water levels north of the fault have impacted the monitoring component of the cleanup remedy for the Pit 6 Landfill OU during this reporting period. All scheduled samples were collected from guard well W-PIT6-1819 and water supply wells CARNRW1 and CARNRW2. Based on these results, the remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

## 2.4. High Explosives Process Area (HEPA) OU 4

The HEPA has been used since the 1950s for the chemical formulation, mechanical pressing, and machining of high explosives (HE) compounds into shaped detonation charges. Surface spills from 1958 to 1986 resulted in the release of contaminants at the former Building 815 steam plant. Subsurface contamination is also attributed to HE waste water discharges into former unlined rinse water lagoons. Another minor source of contamination in ground water resulted from leaking contaminated waste stored at the former Building 829 Waste Accumulation Area (WAA) located near Building 829.

Six GWTSs operate in the HEPA: Building 815-Source (815-SRC), Building 815-Proximal (815-PRX), Building 815-Distal Site Boundary (815-DSB), Building 817-Source (817-SRC), Building 817-Proximal (817-PRX), and Building 829-Source (829-SRC). A map of the HEPA OU showing the locations of monitoring and extraction wells and treatment facilities is presented on Figure 2.4-1.

The 815-SRC GWTS began operation in September 2000 removing VOCs (primarily TCE), HE compounds (RDX and High Melting Explosive [HMX]), and perchlorate from ground water. Initially, the system extracted from one extraction well, W-815-02 and consisted of aqueous-phase GAC, an ion-exchange system, and an anaerobic bioreactor for nitrate destruction. The treated effluent was discharged to a misting system. The anaerobic bioreactor was decommissioned in 2003. In 2005, the wellfield was expanded to include extraction well W-815-04, with a current combined flow rate of approximately 1.2 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for VOC and HE compound removal. In 2005, the discharge method of misting was replaced by injection of the treated effluent into well W-815-1918 for *in situ* denitrification in the $Tnbs_2$ HSU.

The 815-PRX GWTS began operation in October 2002 removing TCE and perchlorate from ground water. Ground water is extracted from wells W-818-08 and W-818-09 at a current combined flow rate of approximately 2.25 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for TCE removal. In 2005, the discharge method of misting was replaced by injection of the treated effluent into well W-815-2134 where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 815-DSB GWTS began operation in September 1999 removing low concentrations (less than 10 µg/L) of TCE from ground water extracted near the Site 300 boundary. Ground water is currently extracted from wells W-35C-04 and W-6ER at a combined flow rate of approximately 3 to 4 gpm. The GWTS originally operated intermittently on solar-power until site power was installed in 2005 when 24-hour operations began. The current GWTS configuration includes a Cuno filter to remove particulates and three aqueous-phase GAC canisters connected in series for TCE removal. The treated effluent is discharged to an infiltration trench.

The 817-SRC GWTS began operation in September 2003 removing HE compounds (RDX and HMX) and perchlorate from ground water. Well W-817-01 extracts ground water from a very low yield portion of the $Tnbs_2$ aquifer. It pumps ground water intermittently using solar power at current flow rates ranging from 40 to 160 gallons per month. The current GWTS configuration includes a Cuno filter to remove particulates, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC canisters (also connected in series) for HE compound removal. Treated ground water is injected into upgradient injection well W-817-06A where an *in situ* natural denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 817-PRX GWTS began operation in September 2005 removing VOCs, RDX, and perchlorate from ground water. Initially, ground water was extracted from wells W-817-03 and W-817-04 at a combined flow rate of approximately 1.0 gpm, although the vast majority of ground water was extracted from well W-817-03. In 2007, the extraction wellfield was expanded to include extraction well, W-817-2318. Due to the low yield from ground water extraction well W-817-04, extraction from this well was discontinued in December 2007. Ground water is currently extracted at a combined flow rate of approximately 1.5 to 2.0 gpm. The current GWTS configuration includes a Cuno filter to remove particulates, two aqueous-phase GAC canisters connected in series for TCE and RDX removal, and three ion-exchange resin columns (also connected in series) for perchlorate removal. A third aqueous-phase GAC canister completes the treatment chain, and is placed in this position to remove any residual organic compounds that may be emitted from new ion-exchange resin. Treated ground water containing nitrate is injected into upgradient injection wells W-817-2109 and W-817-02 that were added in 2007. The treated effluent is split between the two injection wells where an *in situ* denitrification process reduces the nitrate to nitrogen in the $Tnbs_2$ HSU.

The 829-SRC GWTS began operation in August 2005 removing VOCs, nitrate, and perchlorate from ground water. The GWTS configuration included two ion-exchange columns containing ion-exchange resin connected in series for perchlorate removal, three aqueous phase GAC canisters (also connected in series) for VOC removal, and a biotreatment unit to treat nitrate. However, the biotreatment unit was not effectively removing nitrate. An Explanation of Significant Difference (ESD) (Ferry et al., 2010) was submitted to the regulatory agencies in 2010. The ESD documented the decision to use ion-exchange treatment media to remove nitrate from ground water, rather than the existing biotreatment unit. Modifications to 829-SRC were initiated in 2010 and were completed June 2011. Solar power continues to be used to extract ground water from well W-829-06 at a flow rate of approximately 1 to 10 gallons per day (gpd). The current configuration includes two ion-exchange resin columns connected in series for perchlorate and nitrate removal and three aqueous phase GAC canisters (also connected in series) for VOC removal. Treated effluent is injected into upgradient well W-829-08.

### 2.4.1. HEPA OU Ground Water Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

#### *2.4.1.1. HEPA OU Facility Performance Assessment*

The monthly ground water discharge volumes, extraction flow rates, and operational hours are summarized in Tables 2.4-1 through 2.4-6. The total volume of ground water extracted and treated and the total contaminant mass removed during this reporting period is presented in Table Summ-1. The total volume of ground water treated and discharged and the total contaminant mass removed are summarized in Table Summ-2.

Analytical results for influent and effluent samples are presented in Tables 2.4-7 through 2.4-9. The pH measurement results are presented in Appendix A.

#### *2.4.1.2. HEPA OU Operations and Maintenance Issues*

The following maintenance activities and operational issues occurred at the 815-SRC, 815-PRX, 815-DSB, 817-SRC, 817-PRX, and 829-SRC GWTSs during the reporting period:

- An unplanned Site 300 power outage occurred the weekend of March 19-20 that shut down the 815-SRC, 815-PRX, and 817-PRX GWTSs. The facilities were restarted on March 21.

<u>815-SRC GWTS</u>

- Extraction well W-815-04 was shut down on November 23, 2010 to prevent damage from freezing temperatures. The GWTS continued to extract from well W-815-02. Extraction well W-815-04 was restarted on February 9.
- The GWTS was temporarily shut down on February 10 to change-out spent ion-exchange resin.
- The GWTS was temporarily shut down from March 2 to March 3, on March 21, and from March 24 to 28 to install a new bag filter, change pressure gauges, remove excess ports, and install a back-flow preventer.

<u>815-PRX GWTS</u>

- The GWTS was restarted on March 7 after the potential for damage from freezing temperatures had passed.
- Extraction well W-818-08 was shut down from March 22 to 29 to evaluate why no flow was registering. The facility continued to operate on well W-818-09 during this time.
- The GAC vessels were changed on April 4.
- The GWTS was shut down from May 9 to May 11 to install a level transducer and data logger.

815-DSB GWTS

- The pump in extraction well W-35C-04 failed on January 12. The GWTS continued to operate on extraction well W-6ER. The pump in extraction well W-35C-04 was replaced and restarted on February 2.

817-SRC GWTS

- The GWTS was shut down from November 22, 2010 to February 8, 2011 to prevent damage from freezing temperatures. The system was restarted in manual mode. The GWTS was shut down on March 16 because the flow meter was not accumulating gallons or flow. A new check valve and a new module for the totalizer were installed on May 5 and May 12, respectively. The system was restarted May 16.

817-PRX GWTS

- Extraction well W-817-2318 was shut down on November 23 to prevent damage from freezing temperatures. The system continued to extract from well W-817-03.
- The GWTS was shut down on February 28 to repair a Cuno filter housing and restarted on March 1.
- The GWTS was shut down from March 21 to 23 to install a new bag filter, change pressure gauges, remove excess ports, and remove weeds.
- The GWTS was secured on June 1 due to the video logging activities at the injection wells. The system was restarted June 6.
- The system was secured on June 27 for the remainder of the reporting period to install upgraded reinjection well piping.

829-SRC GWTS

- The GWTS remained offline for the majority of the reporting period while the assessment and upgrades removing the biotreatment unit were completed. The facility was restarted on June 20. The facility effluent is being discharged to a bubble tank until it is confirmed that it meets effluent discharge limits.

#### *2.4.1.3. HEPA OU Compliance Summary*

The 815-SRC, 815-PRX, 815-DSB, 817-SRC, and 817-PRX GWTSs operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. As described above, the 829-SRC GWTS did not operate during the majority of this reporting period. Since no treated water was discharged, no compliance monitoring was conducted.

#### *2.4.1.4. HEPA OU Facility Sampling Plan Evaluation and Modifications*

The HEPA OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.4-10. The only modifications made to the plan included the following:

1) No 815-PRX GWTS compliance monitoring was conducted in January and February due to non-operations and two sets of compliance samples were collected in March to comply with re-start procedures.
2) No 815-DSB GWTS influent samples were collected for VOCs in April due to an error in the Sample Planning and Analysis Table (SPACT).

3) No compliance monitoring was conducted at the 817-SRC GWTS in January since it was shut down for freeze protection.
4) No compliance monitoring was conducted at 829-SRC GWTS during the entire reporting period since it was non-operational.

#### *2.4.1.5. HEPA OU Treatment Facility and Extraction Wellfield Modifications*

As discussed in Section 2.4, an ESD for the removal of the biotreatment unit was submitted to and approved by the regulatory agencies in 2010. DOE requested and was granted permission to remove the biotreatment unit by the regulatory agencies at the August 30 Remedial Project Managers (RPM) meeting prior to the finalization of the ESD. The 829-SRC reconfiguration, including minor equipment upgrades, was initiated in 2010 and completed in June 2011. Some other minor facility modifications included the replacement of the GAC vessels at 815-PRX GWTS with higher pressure rated vessels, and other equipment replacements such as particulate filtering vessels, pressure transducers, etc. at several of the GWTSs. None of these modifications impacted the effectiveness of the treatment systems requiring additional compliance monitoring. No other major modifications were made to HEPA treatment facilities.

### 2.4.2. HEPA OU Ground Water and Surface Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.4-11. This table also explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; thirty-one required analyses were not performed because there was insufficient water in the wells to collect the samples, four required analyses were not performed due to access restrictions, one required analysis was not performed because the artesian well not flowing at the time of the sampling event, and thirteen required analyses were not performed due to inoperable pumps.

### 2.4.3. HEPA OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

#### *2.4.3.1. HEPA OU Mass Removal*

The monthly ground water mass removal estimates are summarized in Tables 2.4-12 through 2.4-17. The total mass removed during this reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

#### *2.4.3.2. HEPA OU Contaminant Concentrations and Distribution*

At the HEPA OU, VOCs (mainly TCE, but also including 1,1-DCE, cis-1,2-DCE, and chloroform) are the primary COCs detected in ground water; RDX, HMX, 4-amino-2,6-dinitrotoluene (4-ADNT), perchlorate, and nitrate are secondary COCs. Most ground water contamination at the HEPA occurs primarily in the $Tnbs_2$ HSU. Some TCE, RDX, perchlorate, and nitrate have also been detected in the perched ground water of the Tpsg-Tps HSU in the vicinity of Buildings 815 and 817. Minor concentrations of VOCs, perchlorate and nitrate are also present in $Tnsc_{1b}$ HSU. Tpsg-Tps HSU ground water is also perched beneath the former Building 829 Waste Accumulation Area (WAA), which is located in the northwest portion of HEPA. No contamination has been detected in the Upper and Lower $Tnbs_1$ HSUs in the HEPA OU. Figure 2.4-1 shows the location of existing and new wells in the HEPA OU.

#### *2.4.3.2.1. VOC Concentrations and Distribution*

VOCs (mainly TCE) have been detected in the sands and gravels of the Tpsg-Tps HSU near the 815-SRC, 815-PRX and 817-PRX treatment facilities. These total VOC concentrations have been decreasing over time. In the first semester 2011, the maximum total VOC concentration detected in samples from Tpsg-Tps wells was 53 µg/L in 817-PRX extraction well W-817-2318 (April). Of the 76 wells sampled in the first semester of 2011 in the HE Process Area, the VOCs that were detected in 40 wells were comprised entirely of TCE, except for seven wells (W-809-01, W-814-01, W-814-2138, W-815-02, W-815-04, W-818-11, and W-827-02). The VOC COC 1,1-DCE was detected in wells W-809-01, W-815-02, W-815-04, and W-818-11, all located in the vicinity of the Building 815 source area, at concentrations of 0.9, 0.7, 0.5, and 0.77 µg/L, respectively; below its 6 µg/L MCL cleanup standard. Wells W-809-01, W-814-01, W-818-11, and W-827-02 also contained the VOC COC chloroform at concentrations of 1.1, 0.7, 0.53, and 1.1 µg/L, respectively; well below the 80 µg/L MCL cleanup standard for total trihalomethanes. Samples from two wells located near the former 814 lagoon (W-814-01 and -2138) both contained 1,2-DCA at concentrations of 0.75 and 0.8 µg/L; slightly above the 0.5 µg/L MCL. The VOC COCs cis-1,2-DCE and chloroform were also detected in samples from these two wells; although their concentrations were well below the MCLs/cleanup standards for these constituents. Carbon tetrachloride was also detected in well W-814-01 at a concentration of 0.62 µg/L; slightly above the State 0.5 µg/L MCL but below the 5 µg/L Federal MCL. Limited recharge has led to insufficient water for sampling in some wells screened in the Tps-Tpsg HSU. Total VOCs have remained below the 0.5 µg/L reporting limit in Tpsg-Tps well W-35C-05, located near the site boundary.

In the $Tnbs_2$ HSU, the VOC plume is detached and has migrated from its source near Building 815. The highest VOC concentrations are currently found in the 815-PRX extraction wellfield. Total VOC concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum concentration of 110 µg/L in extraction well W-818-08 (May 1992) to a first semester 2011 maximum total VOC concentration of 40 µg/L in the same well (April).

VOCs continue to be detected in ground water samples collected from $Tnbs_2$ HSU extraction well W-830-2216, located at the southern end of Building 832 Canyon. Contamination detected in this well may originate from sources both in the Building 832 Canyon OU and in the HEPA OU. In June 2007, monitor well W-830-2216 was connected to the 830-DISS treatment facility as an extraction well. After pumping was initiated, total VOC concentrations in this well decreased from a historic maximum of 20 µg/L in May 2007 to a first semester 2011 maximum concentration of 6.7 µg/L (January). Total VOC concentrations have also decreased in nearby monitor well W-830-13.

During the first semester 2011, low VOC concentrations (<3 µg/L) were detected in samples from $Tnbs_2$ guard wells W-815-2110 and W-815-2111, located near the southern site boundary. VOCs were not detected in samples taken from any other onsite or offsite HEPA $Tnbs_2$ guard wells. During the first semester 2011, VOC concentrations were below the 0.5 µg/L reporting limit in fourteen routine and duplicate monthly samples collected from offsite water-supply well GALLO1. Duplicate GALLO1 samples are collected for quality assurance/quality control purposes. Both the routine and duplicate samples were collected on the same date and were sent to different laboratories for analysis.

At the 829-SRC treatment facility, total VOC concentrations in ground water collected from extraction well W-829-06 ($Tnsc_{1b}$ HSU) have decreased from a historic maximum of 1,013 µg/L (August 1993) to a first semester 2011 maximum total VOC concentration of 8.1 µg/L (March). The VOCs detected in the first semester 2001 in well W-829-06 was comprised of 6.9 µg/L of TCE and 1.2 µg/L of cis-1,2-DCE; the two VOC COCs in the 829 area. The TCE concentrations are slightly above its 5 µg/L MCL cleanup standard; cis-1,2-DCE concentrations are below its 6 µg/L MCL cleanup standard. VOCs have never been detected in ground water from nearby monitor well W-829-1940 or in nearby monitor wells screened in the Lower $Tnbs_1$ HSU.

***2.4.3.2.2. HE Compound Concentrations and Distribution***

During the first semester 2011, RDX was not detected at concentrations above the 1 µg/L reporting limit in any ground water samples collected from the Tpsg-Tps HSU. Because this HSU is only periodically saturated, monitor wells screened in this HSU are frequently dry. The historic maximum RDX concentration detected in ground water collected from the Tpsg-Tps HSU was 350 µg/L (March 1988) from well W-815-01; this well has been dry since 1999.

The maximum historic RDX concentration detected in $Tnbs_2$ HSU groundwater was 204 µg/L measured in 1992 in 817-SRC extraction well W-817-01. Since that time, decreasing maximum RDX concentrations have generally been observed in $Tnbs_2$ HSU near both the Building 815 and 817 source areas, with a maximum first semester 2011 RDX concentration of 106 µg/L detected in March (W-809-03). RDX concentrations in monitor well W-809-03, located slightly north and upgradient of injection well W-815-1918, have been increasing, possibly due to the mobilization of RDX in the vadose zone by treated ground water.

To the southwest, the extent of the RDX plume has remained relatively stable and any future downgradient migration should be mitigated when the 817-PRX extraction wellfield is expanded in 2012 to include the recently installed extraction well W-817-2609 and pumping from existing extraction well W-817-03 is increased (see Figure 2.4-1). HE compounds are relatively immobile and due to remediation efforts, the extent of RDX contamination at the leading edge of the $Tnbs_2$ HSU plume (east of 817-PRX) has also remained relatively stable. During the first semester 2011, RDX was not detected at concentrations above the 1 µg/L reporting limit in any samples collected from $Tnbs_2$ HSU guard wells.

In March 2011, RDX was detected for the first time at a low concentration (2 µg/L) in 815-PRX extraction well W-818-09. No HE compounds were found in nearby extraction well W-818-08. In the future, monitoring for HE compounds will continue in these extraction wells and the frequency of sampling may be increased if detections in groundwater continue.

During the first semester 2011, RDX was not detected at concentrations above the 1 µg/L reporting limit in any ground water samples collected from wells located near 829-SRC in the $Tnsc_{1b}$ HSU.

HMX detections in the $Tnbs_2$ HSU have been observed near the 815-SRC and 817-SRC treatment facilities. HMX concentrations in $Tnbs_2$ HSU ground water have decreased from a historic maximum of 57 µg/L in October 1995 (W-817-01) to a maximum of 17 µg/L in the first semester 2011 (W-817-01). HMX was also detected during the first semester 2011 at lower concentrations in several ground water samples collected from 815-SRC wells, including extraction wells W-815-02 and W-815-04.

During the first semester 2011, nitrobenzene was not detected above the 2 µg/L reporting limit in any HEPA ground water samples. Previously, nitrobenzene was detected in the 817-SRC extraction well W-817-01, at a concentration of 6.2 µg/L (April 2008) and in one sample 4.1 µg/L collected from the influent to the 815-SRC GWTS. These samples were the first time nitrobenzene had been detected in ground water in the HEPA. Additional samples taken from W-817-01 and the influent to 815-SRC GWTS have all been below the reporting limit for nitrobenzene.

During the first semester 2011, 4-amino-2,6-dinitrotoluene (4-ADNT) was not detected above its 2 µg/L reporting limit in any $Tnbs_2$ wells or in any treatment facility samples. The highest historic concentration of 4-ADNT detected in HEPA was 24 µg/L, measured in extraction well W-817-01 in September 1997. 4-ADNT was also detected at a concentration of 7.5 µg/L in an influent sample to the 815-SRC GWTS in July 2008.

### *2.4.3.2.3. Perchlorate Concentrations and Distribution*

During the first semester 2011, the maximum perchlorate concentration detected in Tpsg-Tps HSU ground water was 14 µg/L in 817-PRX extraction well W-817-2318 (April). The historic maximum perchlorate concentration detected in this well was 17 µg/L in March 2008.

In the $Tnbs_2$ HSU, perchlorate concentrations have decreased from a historic maximum of 50 µg/L (February 1998) in extraction well W-817-01 to a first semester 2011 maximum concentration of 29 µg/L in the same well (May). Overall, perchlorate concentrations continue to decline and the southwestern plume front has been receding due to continued 817-PRX and 817-SRC operations. To the north, the $Tnbs_2$ HSU perchlorate plume has been declining based on concentration trends observed in monitor well W-809-03 and in 815-SRC extraction wells W-815-02 and W-815-04. Previously, an increasing trend was observed in this area as a result of the mobilization of perchlorate by injection of treated ground water into nearby 815-SRC injection well W-815-1918. Perchlorate was not detected in any of the $Tnbs_2$ HSU guard wells during the first semester 2011.

During the first semester 2011, perchlorate concentrations in $Tnsc_{1b}$ HSU extraction well W-829-06 have decreased from a historic maximum of 29 µg/L (December 2000) to a concentration of 7.2 µg/L (March). Perchlorate was not detected above its reporting limit in monitor well W-829-1940.

Perchlorate was also not detected in any HEPA Qal/WBR wells during the reporting period.

### *2.4.3.2.4. Nitrate Concentrations and Distribution*

During the first semester 2011, the maximum nitrate concentration detected in ground water from Tpsg-Tps HSU was 550 mg/L (W-6CS, February). Because there are no known septic systems or other Site 300 operations representing potential nitrate sources near this well, these elevated nitrate levels are probably related to a pre-Site 300 sheep ranch that was discovered in a historic photo of the area. Ground water sampled from all other wells screened in this HSU had significantly lower nitrate concentrations. The highest nitrate concentration found in other wells screened in this HSU was 160 mg/L (817-PRX extraction well W-817-2318, April).

During the first semester 2011, nitrate concentrations in ground water collected from the $Tnbs_2$ HSU ranged from <0.1 mg/L in the vicinity of the Site 300 boundary to a maximum of 100 mg/L (W-815-02 and W-815-04, February). Nitrate was not detected above the 45 mg/L cleanup standard in ground water from any of the $Tnbs_2$ guard wells sampled during this reporting period.

During the first semester 2011, the maximum nitrate concentration detected in a sample from the $Tnsc_{1b}$ HSU was 56 mg/L (extraction well W-829-06, March). The maximum nitrate concentration detected in monitor well W-829-1940 during the first semester 2011 was 24 mg/L (March). Nitrate was not detected above the 45 mg/L cleanup standard in Qal/WBR guard wells during the first semester 2011.

During the first semester 2011, nitrate concentrations measured in ground water continue to support the interpretation that nitrate is being degraded *in situ* by natural processes. Due to microbial denitrification, nitrate concentrations remain below the 45 mg/L cleanup standard in all wells near the southern site boundary where the ground water exists under confined conditions.

### *2.4.3.3. HEPA OU Remediation Optimization Evaluation*

Remediation at the HEPA OU is managed by balancing ground water extraction at the site boundary with upgradient source area pumping. Remediation is necessary to cleanup several co-mingled COC plumes (VOCs, perchlorate, high explosives compounds and nitrate) located in the $Tnbs_2$ (primary), Tpsg-Tps and $Tnsc_{1b}$ HSUs. Engineering evaluations and upgrades were initiated at several treatment facilities (829-SRC, 815-DSB and 817-PRX) during 2010 and 2011 and these upgrades will be completed in 2012.

Contaminants in the Tpsg-Tps HSU, although limited in areal extent and concentration, include VOCs, perchlorate, high explosives compounds and nitrate. To remediate this HSU, efforts have been focused in the area with the highest concentrations located near 817-PRX extraction well W-817-2318. This extraction well removes ground water from the Tpsg-Tps HSU near Spring 5. Although remediation efforts are hampered by limited recharge, low ground water yield and dry conditions, concentrations of all COCs in the Tpsg-Tps HSU continue to decline.

In the $Tnbs_2$ HSU, extraction wells W-818-08 and W-818-09 capture the area with the highest VOC concentrations. This extracted groundwater is treated at the 815-PRX treatment facility. During the first semester, extraction flow rates were increased at this facility and increased hydraulic capture is expected.

Near the 817-PRX treatment facility, one new $Tnbs_2$ HSU extraction well, W-817-2609, was installed during 2010 (Figure 2.4-1). This extraction well will help to remove VOCs and perchlorate in the southwestern areas of these plumes and is expected to be connected to the 817-PRX treatment facility in 2012 after a treatment facility engineering evaluation and upgrade is completed. Additionally, as part of the facility upgrade, the flow rate for W-817-03 well will be increased above 3 gpm to increase hydraulic capture.

Located near the 815-DSB treatment facility, extraction wells W-6ER and W-35C-04 capture VOCs along the southern site boundary at the leading edge of the plume. During 2010, two new 815-DSB extraction wells (W-815-2608 and W-815-2621) were installed to increase hydraulic capture in this area. These new extraction wells will be connected to the 815-DSB treatment facility in 2012. The new wells will increase the areas of hydraulic capture and are expected to help to prevent contaminants from moving farther downgradient in the $Tnbs_2$ HSU.

Although the extent of the primary and secondary COC plumes in the HEPA did not change significantly during the first semester 2011, the total VOC and RDX concentrations within the plumes continue to decline. HE compounds are relatively immobile and these trends are due to focused remediation efforts in the source and proximal areas of this OU. RDX concentrations continue to increase in monitor well W-809-03. This trend is probably due to the mobilization of RDX near 815-SRC injection well W-815-1918. RDX concentration trends in the 815-SRC extraction wells, W-815-02 and W-815-04, continue to decline.

Perchlorate concentrations in the $Tnbs_2$ HSU have steadily decreased since monitoring for this COC began in 1998. Historically, the 817-SRC (W-817-01) and 817-PRX (W-817-03 and W-817-04) extraction wells have had the highest perchlorate concentrations in the HEPA. In early 2008, extraction from well W-817-04 was terminated due to low yield. Pumping from extraction well W-817-03 continues and the treated water is injected into upgradient wells W-817-02 and W-817-2109. Perchlorate concentrations measured in ground water upgradient of the 815-SRC extraction wellfield and near monitor well W-809-03 remain stable; however, these areas are within hydraulic capture zones.

The 829-SRC GWTS is a small facility that extracts and treats ground water from the $Tnsc_{1b}$ HSU. In 2010, an ESD was submitted to regulatory agencies to request a change in the 829-SRC treatment facility technology. The ESD documents the decision to use ion-exchange treatment media to remove nitrate from ground water, rather than the existing biotreatment unit. Modifications to 829-SRC were initiated in late 2010 and were completed in the first semester 2011.

During the first semester 2011, pumping from HEPA extraction wells has been effective in capturing COCs and preventing contaminated ground water from reaching the Site 300 southern boundary. During the reporting period, there were no detections of total VOCs at offsite water supply well, GALLO1. Upgradient reinjection of treated ground water has also been important in flushing out contaminants in many portions of the HEPA OU. In the future, upgradient and downgradient pumping will continue to be balanced. Close monitoring of VOC concentrations in the southern site boundary area will also continue, especially near offsite water-supply well GALLO1.

#### *2.4.3.4. HEPA OU Remedy Performance Issues*

There were no new issues that affect the performance of the cleanup remedy for the HEPA OU during this reporting period. The remedy continues to be effective and protective of human health and the environment.

## 2.5. Building 850/Pit 7 Complex OU 5

High explosive experiments were conducted at the Building 850 Firing Table from the 1950s until 2008. While explosives tests were conducted at Building 850, the firing table was covered with gravel to absorb the shock. The Building 850 firing table was routinely rinsed down with water after each experiment to reduce dust. Infiltrating water mobilized chemicals from the contaminated gravel to the underlying bedrock and ground water, however this practice was discontinued in 2004. Until 1989, gravels from the firing table surface were periodically removed and disposed of in several pits in the northwest part of the site.

A Corrective Action Management Unit (CAMU) was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action. A total of 27,592 cubic yards of polychlorinated biphenyl, dioxin, and furan-contaminated soil were excavated from the Building 850 Firing Table area, mixed with Portland cement and water, and consolidated and compacted to form the CAMU. Additional information on the Building 850 Removal Action is presented in the Building 850 Action Memorandum (Dibley et al., 2008). Design information for the CAMU is presented in the construction subcontractor's 100% design submittal (SCS Engineers, 2009). The inspection and maintenance program for the CAMU program is described in Section 3. A map of the Building 850 area within OU 5 showing the locations of Building 850, the CAMU, and monitor wells are presented on Figure 2.5-1.

The Pit 7 Complex area within OU 5 consists of the Pit 3, 4, 5, and 7 Landfills. The Pit 7 Complex landfills were used to dispose of firing table debris and gravel. These pits were constructed by excavating topsoil and alluvial materials to an average depth of 15 to 20 ft (Taffet et al., 1989). The majority of the waste material in the pits came from the firing tables at Buildings 850 and 851, where aboveground detonations were conducted. The waste placed in the pits included wood, plastic, material and debris from tent structures, pea gravel, and exploded test assemblies, some of which contained tritium and depleted uranium.

When rainfall increased to above normal levels, such as during El Niño years, the pit waste and underlying bedrock were often inundated and residual contamination came into contact with shallow subsurface ground water. Ground water contaminants include tritium, uranium, perchlorate, nitrate, and VOCs.

In 1992, an engineered cap was constructed over the Pit 7 Landfill (referred to as the Pit 7 Cap) in compliance with Resource Conservation and Recovery Act (RCRA) requirements. The design included interceptor trenches and surface water drainage channels, a top vegetative layer to prevent erosion, a biotic barrier layer to minimize animal burrowing, and a clay layer of very low permeability to prevent infiltration of precipitation and shallow subsurface interflow that could result in leaching of contaminants. The Pit 7 cap also covers 100% of Pit 4 and approximately 25 to 30% of Pit 3. The original compacted native soil cover on most of Pit 3 and all of Pit 5 remains intact.

The Pit 7 Drainage Diversion System, completed in March 2008, was designed to prevent further releases of COCs from the pits and underlying bedrock to ground water. There are four components that comprise the drainage diversion system:

1. A subsurface drainage network on the western hill-slope.
2. Upgraded riprap at the end of the existing north-flowing concrete channel for the Pit 7 Landfill cap.
3. A vegetated surface water diversion swale along the base of the eastern hill-slope, along the paved road (Route 4), including several culverts under Route 4 and dirt fire trails.
4. An upgraded surface water-settling basin at the south end of the existing south-flowing concrete channel for the Pit 7 Landfill cap.

Additional information on the Pit 7 cap and Drainage Diversion System design is presented in the Remedial Design Document for the Pit 7 Complex (Taffet et al., 2008). The detection monitoring, inspection, and maintenance program for the Pit 7 Complex Landfills and the inspection and maintenance program for the Drainage Diversion System are described in Section 3.

The Pit 7-Source (PIT7-SRC) GWTS began operation in May 2010. Three existing monitor wells, NC7-25, NC7-63, and NC7-64, were converted to extraction wells and three wells were drilled to serve as extraction wells (W-PIT7-2305, W-PIT7-2306, and W-PIT7-2307). The GWTS removes uranium, VOCs, nitrate, and perchlorate from ground water in wells within the Quaternary alluvium/Weathered bedrock (Qal/WBR) HSU (NC7-63, NC7-64, and W-PIT7-2306), $Tnbs_1/Tnbs_0$ bedrock HSU (NC7-25), and both HSUs (W-PIT7-2305, and W-PIT7-2307). Well NC7-25, screened in the $Tnbs_1/Tnbs_0$ HSU, will only be pumped when ground water levels in the overlying Qal/WBR HSU are sufficiently low to avoid pulling ground water containing depleted uranium and other contaminants in the Qal/WBR HSU into the $Tnbs_1/Tnbs_0$ HSU. These conditions are most likely to occur in late summer/early fall towards the end of the dry season. The GWTS extracts ground water at an approximate combined flow rate of 0.2 gpm. The current GWTS configuration includes three ion-exchange resin canisters for the removal of uranium followed by three ion-exchange resin canisters containing a nitrate-selective resin that is also effective in removing perchlorate. Ground water that has been treated to remove uranium, nitrate, and perchlorate is then piped through three aqueous-phase GAC canisters to remove VOCs. The treated water, which still contains tritium, is discharged to an infiltration trench.

A map of the Pit 7 Complex area within OU 5 showing the locations of the landfills, Drainage Diversion System, extraction and monitor wells, and the treatment system is presented on Figure 2.5-1.

### 2.5.1. Building 850 Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-1. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; twenty-eight required analyses were not performed because there was insufficient water in the wells to collect the samples and eight required analyses were not performed due to unsafe conditions at the well.

### 2.5.2. Building 850 Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

#### *2.5.2.1. Building 850 Area of OU 5 Contaminant Concentrations and Distribution*

In the Building 850 area of OU 5, tritium and perchlorate are the primary COCs detected in ground water; depleted uranium and nitrate are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs.

### *2.5.2.1.1. Tritium Activities and Distribution*

The maximum tritium activities in ground water downgradient of Building 850 have decreased from a historic maximum of 566,000 pCi/L in 1985 (NC7-28) to a maximum of 53,300 pCi/L during the first semester 2011 (NC7-70). The highest tritium activities in ground water continue to occur directly downgradient of the Building 850 Firing Table. The extent of the 20,000 pCi/L cleanup standard ground water tritium activity contour in both the Qal/WBR and $Tnbs_1/Tnbs_0$ bedrock HSUs has decreased slightly compared to 2009 and 2010. While tritium activities continue to decline in most portions of the Building 850 plume, ground water tritium activities in wells in the farthest downgradient portion of the plume exhibit a slowly increasing trend. However, the overall extent of the 100 pCi/L tritium activity contours in both the Qal/WBR and $Tnbs_1/Tnbs_0$ bedrock HSUs are similar to those of 2009.

Wells W-PIT2-2301 and W-PIT2-2302, both screened in the Qal/WBR HSU and located in Elk Ravine downgradient of Landfill Pit 2, yielded tritium activities within background range (<100 pCi/L) in all samples collected in 2010. This was again the case during the first semester 2011 (May) when a sample was collected and analyzed from both wells. Given the low activities of the Qal/WBR samples, tritium from Building 850 is apparently not present in this HSU, in Elk Ravine. Overall, the extent of tritium in ground water with activities above the 400 pCi/L California State PHG remains stable, and the extent of ground water with tritium in excess of background is similar to that of previous years.

### *2.5.2.1.2. Uranium Concentrations and Distribution*

Total uranium activities in ground water were equal to or below the 20 pCi/L cleanup standard in samples from all wells in the Building 850 area during the first semester 2011. The first semester 2011 maximum uranium activity was 20 pCi/L measured in the May sample from well W-850-2315; this well is screened in the $Tnbs_1/Tnbs_0$ HSU and is located south and cross-gradient of Building 850. Historic isotope ratio data indicate the uranium in ground water samples from well W-850-2315 is natural and the uranium activities are within the range of natural background levels at Site 300. The first semester 2011 maximum uranium activity in ground water containing some depleted uranium, as indicated by mass spectrometry, was 9.7 pCi/L in a sample from well NC7-28 (April); this well is screened across the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs and located directly downgradient of the Building 850 Firing Table.

Uranium analyses for first semester 2011 were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS). High precision uranium isotope data (uranium-235/uranium-238 [$^{235}U/^{238}U$] atom ratio) for determining the presence of depleted uranium are only available by ICP-MS analysis. The presence of depleted uranium is indicated by a $^{235}U/^{238}U$ atom ratio of less than 0.007. Historic uranium isotope data indicate that distributions of ground water within the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs containing some added depleted uranium extend downgradient about 1,200 ft and 700 ft, respectively, from the Building 850 Firing Table and have remained relatively stable. Depleted uranium has also been detected in Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water from wells downgradient of the Pit 2 Landfill and from wells in the $Tnbs_1/Tnbs_0$ HSU south of the Pit 2 Landfill. The uranium isotope data for the first semester suggest that this has not changed. However, the maximum uranium activities detected this semester, in Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water from wells downgradient of the Pit 2 Landfill were 0.98 pCi/L (W-PIT2-2301, May) and 5.4 pCi/L (W-PIT2-1934, May), respectively; well below the 20 pCi/L total uranium cleanup standard.

### *2.5.2.1.3. Nitrate Concentrations and Distribution*

Nitrate was detected at concentrations at or above the 45 mg/L cleanup standard in samples from seven Building 850 area wells during the first semester 2011. The maximum nitrate concentration detected was 130 mg/L in the May 2011 sample from well NC7-29. The historic local maximum of

180 mg/L was also detected in ground water samples from this same well in June 2007 and April 2009. Well NC7-29, screened in the $Tnbs_1/Tnbs_0$ HSU, is located south and cross-gradient of Building 850. The first semester 2011 maximum nitrate concentration in wells located directly downgradient of the Building 850 source area was 57 mg/L in an April 2011 ground water sample from well NC7-28, screened across the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs.

Historic data indicate that ground water nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs are limited in extent and relatively stable. Overall, the distribution and concentrations of nitrate in ground water are generally consistent, or have declined slightly from those observed in previous years.

#### *2.5.2.1.4. Perchlorate Concentrations and Distribution*

During the first semester, perchlorate concentrations exceeding the 6 µg/L cleanup standard were detected in ground water samples from 28 wells east and south of Building 850 and east of Pit 1. The first semester 2011 maximum perchlorate concentration of 74 µg/L was detected in the April 2011 sample from well W-850-2417, located directly downgradient of the Building 850 Firing Table. Wells downgradient of the Building 850 Firing Table continue to exhibit the highest perchlorate concentrations in the Building 850 area. Perchlorate concentrations in excess of the cleanup standard in Qal/WBR and $Tnbs_1/Tnbs_0$ HSU ground water extend continuously 2,000 and 1,200 ft, respectively from Building 850. Compared to last year, this semester, concentrations of perchlorate are similar or have increased slightly in the $Tnbs_1/Tnbs_0$ HSU immediately downgradient of Building 850. This semester, concentrations of perchlorate are similar or have decreased slightly from last year's in Qal/WBR HSU wells immediately downgradient of Building 850.

Last year, 10 µg/L of perchlorate were measured in the October 2010 sample from Tmss HSU well NC7-69, located 500 ft downgradient (northeast) of Building 850. This was its first occurrence since sampling of the well for perchlorate began in 2001. During the first semester 2011, both the primary and duplicate samples collected from this well contained <4 µg/L of perchlorate, suggesting that last semester's result may have been spurious. Future sample results will indicate if the presence of perchlorate in ground water from this well is substantiated.

The overall extent of perchlorate in ground water in and downgradient of the Building 850 area did not change significantly from last year and will continue to be closely monitored.

#### *2.5.2.1.5. HE Compound Concentrations and Distribution*

During the first semester, ground water samples from 23 wells located in or downgradient of the Building 850 Firing Table were collected and analyzed for the HE compounds, HMX and RDX at a reporting limit of 1 µg/L. Contract laboratory reporting limits were higher in the past, varying from 5 to 20 µg/L. The lower reporting limits have enabled definition of the extent of HMX and RDX in Qal/WBR HSU ground water; the source appears to be the Building 850 Firing Table.

During the first semester 2011, the RDX cleanup standard (1 µg/L) was exceeded in samples from two of the 23 wells. Last year, the cleanup standard was exceeded in four of 20 wells sampled for RDX. The maximum RDX concentration of 6.5 µg/L was detected in an April 2011 sample from well W-850-2417 located directly east (downgradient) of the Building 850 Firing Table. The other well yielding detectable RDX this semester was well NC7-28, located adjacent to well W-850-2417 and screened in the same HSUs. The data indicate that RDX exceeding the cleanup standard has decreased in extent from last year. Last year, the October 2010 sample from $Tnsc_0$ HSU well W-850-2416, located immediately downgradient of the Building 850 Firing Table, yielded 2.7 µg/L of RDX. This semester, RDX was not detected at or above the reporting limit in the sample from the well (April). This was also the case in the April 2010 sample and other previous samples from this well. Thus, the

October 2010 result may be spurious. Continued monitoring will determine whether RDX actually occurs in the ground water adjacent to this well.

This year, one well yielded a sample containing HMX above the reporting limit. Last year, HMX was detected above the reporting limit in samples from six wells and one spring (W8SPRNG). Of note, this semester, well NC7-54, which last year yielded HMX above the reporting limit, was not sampled. The single HMX concentration of 15 µg/L was detected in the April 2011 sample from well NC7-28 and is significantly below the Regional Tapwater Screening Level for HMX (1,800 µg/L). The extent of HMX is ground water has decreased from its 2010 limit 700 ft east and southeast of the Building 850 Firing Table to the vicinity of a single well. HE compounds were not detected above the reporting limit in ground water samples from wells screened in the $Tnbs_1$/$Tnbs_0$ HSU downgradient of Building 850 or from wells screened in the underlying $Tnsc_0$ HSU. The distribution of HE compounds in ground water at Building 850 is similar to or less extensive compared to observations made in 2008 and 2009, when regular sampling and analysis for these chemicals commenced.

This semester, the extent of HMX and RDX has decreased compared to last year and these compounds are now confined to the Qal/WBR and $Tnbs_1$/$Tnbs_0$ within a small area immediately downgradient of the firing table.

### *2.5.2.2. Building 850 Area of OU 5 Remediation Optimization Evaluation*

MNA is the selected remedy for remediation of tritium in ground water emanating from the Building 850 area. Recent data indicate MNA continues to be effective in reducing tritium activities in ground water. The highest tritium activities in ground water continue to be located directly downgradient of the tritium sources at the Building 850 Firing Table and continue to decline. The extent of the 20,000 pCi/L cleanup standard tritium activity contours in both HSUs continues to diminish. The significant decreases in activities and extent of the Building 850 tritium plume with activities exceeding the cleanup standard indicate that natural attenuation (dispersion, radioactive decay, and a decreasing source term) continues to be effective in reducing tritium activities in ground water. In general, ground water tritium activities continue to decline and are significantly below historic highs throughout the Building 850 plume.

Total uranium activities in ground water are at or below the 20 pCi/L cleanup standard in samples from all wells in the Building 850 area. The overall extent of total uranium activities at Building 850 has not changed significantly. The monitoring-only strategy for uranium at Building 850 continues to be protective given that: (1) total uranium activities in Building 850 ground water generally remain at or below the 20 pCi/L cleanup standard; and (2) the areal extent of depleted uranium has not changed during the period of monitoring. Temporal trends in $^{235}U/^{238}U$ isotope ratios from past samples have remained stable. In particular, highly depleted $^{235}U/^{238}U$ atom ratios (0.0024-0.0025) in samples from well NC7-28 suggest that a depleted uranium source existed at the firing table.

The overall extent and maximum concentrations of nitrate and perchlorate in ground water are also similar to those observed in previous years. An *in situ* perchlorate bioremediation treatability test is scheduled to commence at Building 850 during the second semester 2011. Studies conducted with lower Neroly Formation ground water and aquifer materials, which are analogous to those present at Building 850, indicated that ethyl lactate promotes microbial reduction of perchlorate without adverse chemical by-products. The objective of this test is to evaluate the efficacy of *in situ* enhanced remediation methods to reduce perchlorate ground water concentrations directly downgradient of the Building 850 Firing Table. Recently installed well W-850-2417 will serve as a reagent injection well and nearby downgradient well NC7-28 and deeper well W-850-2416 will serve as performance monitor wells for this test. The commencement of the test was delayed while 500 gallons of ground water was pumped and collected and due to the correction of several technical issues with *in situ* monitoring equipment. When the test commences during the second semester 2011, this ground water will be injected together with ethyl lactate.

#### *2.5.2.3. Building 850 Area of OU 5 Remedy Performance Issues*

There were no new issues that affect the performance of the cleanup remedy (MNA) for tritium in the Building 850 area during this reporting period. The remedy for tritium continues to be effective and protective of human health and the environment, and to make progress toward cleanup. Perchlorate, uranium, and RDX in ground water downgradient of the Building 850 Firing Table will continue to be closely monitored and reported. An *in situ* bioremediation treatability test is planned to remediate perchlorate in ground water in the Building 850 source area. Although this treatability test will specifically target perchlorate, the performance of this technology with respect to uranium and RDX remediation or stabilization will also be evaluated. A treatability test work plan was submitted to the regulatory agencies during the second semester 2010 and was approved during this semester. The test will commence during the second semester 2011.

### 2.5.3. Pit 7 Complex Area of OU 5 Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; compliance summary; facility sampling plan evaluation and modifications: and treatment facility and extraction wellfield modifications.

#### *2.5.3.1. Pit 7 Complex Area of OU 5 Facility Performance Assessment*

The monthly ground water discharge volumes and rates and operational hours are summarized in Table 2.5-2. The total volume of ground water extracted and treated, and masses removed, during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and masses removed are summarized in Table Summ-2. Analytical results for influent and effluent samples are shown in Tables 2.5-3 through 2.5-6. The pH measurement results are presented in Appendix A.

#### *2.5.3.2. Pit 7 Complex Area of OU 5 Operations and Maintenance Issues*

The following maintenance activities and operational issues occurred at the PIT7-SRC GWTS during the reporting period:

- Extraction wells NC7-63 and NC7-64 were protected from freezing temperatures and shut down from November 15 to March 7.
- Extraction well W-PIT7-2307 was shut down on March 7 to prevent drawing contaminants from the Qal/WBR HSU into the underlying $Tnbs_1$/$Tnbs_0$ bedrock HSU.
- On March 3, an ion-exchange resin column was installed after the GAC units.
- The GWTS was shut down from March 23 to March 28 due to a detection of chloroform in the facility effluent (see Section 2.5.3.3).
- The GWTS was shut down from March 31 to April 6 to replace the transfer pump and transfer tank switch, clean the transfer pump switch, and change several extraction well batteries.
- The GWTS was shut down June 8 to June 9 to perform maintenance.

#### *2.5.3.3. Pit 7 Complex Area of OU 5 Compliance Summary*

At the Pit 7-SRC GWTS, chloroform was detected in an effluent sample collected on March 7, 2011 at a concentration of 0.65 µg/L. An additional effluent sample was collected on March 23, and then the GWTS was shut down. No chloroform was detected in this effluent sample above the reporting limit of

0.5 µg/L. The system was restarted and a third effluent sample was collected on March 28. No chloroform was detected. Although there was one detection of chloroform, it did not exceed the maximum daily discharge limit, and with the two additional non-detections, the monthly median discharge limit was also not exceeded. The source of the chloroform is unknown. Chloroform is often a laboratory contaminant and chloroform has never been detected in any of the extractions wells at this GWTS. Therefore, the PIT7-SRC GWTS still operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge.

#### *2.5.3.4. Pit 7 Complex Area of OU 5 Facility Sampling Plan Evaluation and Modifications*

The PIT7-SRC treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.5-7. The only changes made to the plan included two additional effluent samples for VOCs to evaluate the chloroform detection, and one extra effluent sample for nitrate after the installation of an additional anion exchange column as described below.

#### *2.5.3.5. Pit 7 Complex Area of OU 5 Treatment Facility and Extraction Wellfield Modifications*

The only modifications to the treatment facility included the addition of an anion exchange column at the end of the treatment train as a final scrubber for nitrate. The influent nitrate concentrations have historically been below the nitrate discharge limit of 45 mg/L, with the exception of one set of samples collected in April 2011. The anion exchange resins used for both uranium and perchlorate adsorption also sorb nitrate, and once they became saturated, nitrate was released from these resin columns at higher concentrations than the influent to the GWTS. This necessitated adding a final column to remove excess nitrate. Modifications to the extraction wellfield during this reporting period included discontinued extraction from W-PIT7-2307 after well completion evaluation and analysis of water elevations revealed that this well is screened in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs. Since its completion and subsequent pumping, water elevations observed this well have been below the contact between the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs. Henceforth, so as to not draw contaminants from the Qal/WBR HSU into the underlying $Tnbs_1/Tnbs_0$ bedrock HSU, pumping on this well will only be conducted when water elevations in the well extend upward into the Qal/WBR HSU. No such restrictions have been placed on well W-PIT7-2305, which is also screened across both HSUs because historic water elevations have always extended above the $Tnbs_1/Tnbs_0$ HSU into the Qal/WBR HSU. In addition, three other extraction wells (NC7-63, NC7-64, and W-PIT7-2306) were taken offline starting in April 2011 due to drilling operations that required disconnecting their discharge lines. These wells will be put back online during the second semester 2011.

### 2.5.4. Pit 7 Complex Area of OU 5 Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.5-8. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; thirty-nine required analyses were not performed because there was insufficient water in the wells to collect the samples and five required analysis were not performed due to an inoperable pump.

### 2.5.5. Pit 7 Complex Area of OU 5 Remediation Progress Analysis

This section is organized into three subsections: analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

### 2.5.5.1. Pit 7 Complex Area of OU 5 Mass Removal

The monthly ground water mass removal estimates are summarized in Table 2.5-9. The total mass removed during this reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

### 2.5.5.2. Pit 7 Complex Area of OU 5 Contaminant Concentrations and Distribution

In the Pit 7 Complex area of OU 5, tritium is the primary COC in ground water and uranium, perchlorate, nitrate, and VOCs are secondary COCs. These constituents have been identified within the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs.

#### 2.5.5.2.1. Tritium Activities and Distribution

Overlapping plumes of tritium in ground water extend from Pit 3 and Pit 5 Landfill sources. The Pit 7 Landfill is not an apparent source of tritium to ground water as most of the tritium-bearing experiments at Site 300 were conducted prior to its opening in 1979 (Taffet et al., 2008) and well NC7-48, located directly downgradient of Pit 7 and upgradient of Pit 3, has generally yielded ground water samples that contain tritium activities within background ranges. The current ground water sample collected from well NC7-48 contained less than 100 pCi/L of tritium (April 2011).

Tritium activities in the Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 2,660,000 pCi/L in 1998 to a first semester 2011 maximum tritium activity of 575,000 pCi/L (April). This represents an increase from last year, as the maximum tritium activity in 2010 was 255,000 pCi/L (January). The historic, this semester's, and the 2010 maximum tritium activities were all detected in samples from well NC7-63, located directly downgradient of Pit 3. Tritium activities in Qal/WBR ground water have generally declined, though some wells showed increases. The observed trends in tritium activity may be related to ground water extraction which began in April 2010 and/or changes in recharge brought about by the drainage diversion system, potentially due to less dilution. Ground water elevations in the Qal/WBR HSU in the Pit 7 Complex generally increased 2 to 3 ft following the above-average 2009-2010 rainfall. This was expected, as the drainage diversion system is not designed to prevent water level rises but to minimize the influence of extreme storm events by diverting excess runoff and shallow subsurface flow during very heavy rainfall years (i.e., El Niño events) to prevent water tables rises into the landfills. During and following the 2009-2010 rainfall period, including this semester, ground water levels remained well below the bottoms of the Pit 7 Complex Landfills. Continued monitoring of water elevations and tritium activities may clarify the specific processes responsible for the observed tritium activities. In the Qal/WBR HSU, the region of ground water containing tritium in excess of the cleanup standard extends about 1,300 ft southeast from the northern edge of Pit 3. The extent of the 20,000 pCi/L cleanup standard ground water tritium activities in the Qal/WBR HSU in the Pit 7 Complex area is similar to 2010.

Tritium activities in the $Tnbs_1/Tnbs_0$ HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 770,000 pCi/L in 1999 to a 2010 maximum tritium activity of 214,000 pCi/L (May). Both the historic and first semester 2011 maximum tritium activities were detected in samples from well NC7-25, located about 250 ft downgradient (northeast) of the Pit 3 Landfill. In general, tritium activities in the $Tnbs_1/Tnbs_0$ HSU are similar or have declined slightly compared to 2010 measurements. The highest tritium activities in $Tnbs_1/Tnbs_0$ HSU in Pit 7 Complex area ground water, in excess of the 20,000 pCi/L cleanup standard, continue to extend about 800 ft northeast of Pit 3 and Pit 5. The extent of tritium in excess of the 20,000 pCi/L cleanup standard in the $Tnbs_1/Tnbs_0$ HSU in the Pit 7 Complex area is also similar to 2010 observations.

Overall, the extent of tritium in ground water with activities above the 400 pCi/L California State PHG remains stable, and the extent of ground water with tritium in excess of background is similar to 2010.

### *2.5.5.2.2. Uranium Concentrations and Distribution*

Depleted uranium was previously released to ground water from sources in the Pits 3, 5, and 7 Landfills (Taffet et al., 2008). Uranium activities in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 781 pCi/L (NC7-40, April 1998) to a first semester 2011 maximum of 171 pCi/L (NC7-63, April). The 2010 maximum activity of 120 pCi/L was also detected in a sample from this well. Uranium activities exceeded the 20 pCi/L cleanup standard in samples from 12 wells in the Qal/WBR HSU during the first semester (these same wells exceeded cleanup standards in 2010). All 12 wells are proximal to the landfills and have historically shown $^{235}U/^{238}U$ isotopic ratios indicating some depleted uranium. The extent of uranium in excess of the cleanup standard in the Qal/WBR HSU is confined to an area directly adjacent to Pit 3 and another area that extends from Pit 5 southeast about 500 ft. The extents of both these regions are stable and similar to what has been observed over the last few years. The extent of depleted uranium in Qal/WBR HSU ground water has changed little since the mid-1990s. Areas of depleted uranium in ground water are bounded by wells that have in the past, exhibited ground water isotope mass ratios indicative of natural uranium. This indicates that the depleted uranium plume is not migrating significantly in the short term within the Qal/WBR HSU ground water. Sorption may be responsible for slowing the migration of depleted uranium in ground water compared to conservative contaminants such as tritium.

One sample collected in January 2010 from well W-PIT7-2305 screened in both the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs, exceeded the 20 pCi/L cleanup standard (22.4 pCi/L). Two subsequent samples collected from this well in May and October 2010 contained about 15 pCi/L. The $^{235}U/^{238}U$ isotopic ratios of samples collected from this well in 2010 were indicative of natural uranium. The uranium activity in the first semester 2011 sample from this well, as determined by alpha spectrometry, was 17.5 pCi/L.

Uranium activities in the $Tnbs_1/Tnbs_0$ HSU have decreased from a historic maximum of 51.45 pCi/L in 1998 to a first semester 2011 maximum of 35.5 pCi/L (June 2011). The 2010 maximum activity was 36.5 pCi/L (June 2010). All these maximum uranium activities were detected in samples from well NC7-25, located about 250 ft downgradient (northeast) of the Pit 3 Landfill. Well NC7-25 is the only $Tnbs_1/Tnbs_0$ HSU well that historically and currently yields ground water containing uranium in excess of the cleanup standard. All previous isotope ratio data indicate that the uranium in NC7-25 ground water is natural. Ground water samples from wells screened in the $Tnbs_1/Tnbs_0$ HSU have not shown depleted uranium mass ratios indicating that depleted uranium has not migrated downward into the $Tnbs_1/Tnbs_0$ HSU.

As is the case for the Building 850 portion of OU 5, uranium activity analyses for the first semester were performed primarily by alpha spectroscopy with selected samples analyzed by Inductively Coupled Plasma - Mass Spectrometry (ICP-MS).

### *2.5.5.2.3. Nitrate Concentrations and Distribution*

Nitrate was detected at concentrations at or above the 45 mg/L cleanup standard in samples from six Pit 7 Complex area wells during the first semester 2011. These wells are located downgradient and northeast of the Pit 7 Complex area. In February 2010 several wells screened in the Qal/WBR HSU, NC7-16, NC7-21, and NC7-34, yielded samples with reported nitrate concentrations of 290, 210, and 150 mg/L, respectively. These results are suspect as the subsequent May 2010 samples yielded nitrate concentrations of 39, 40, and 27 mg/L, respectively. During the first semester 2011, these wells again yielded similar concentrations of 22, 36, and 23 mg/L. These last two semesters' results are equivalent to historic nitrate concentrations observed at these wells.

The maximum nitrate concentration detected in the Pit 7 Complex area during the first semester 2011 was 90 mg/L in the April 2011 sample from Qal/WBR HSU extraction well NC7-63, located immediately downgradient of Pit 3. The first semester 2011 maximum nitrate concentration in the $Tnbs_1/Tnbs_0$ HSU was 65 mg/L (NC7-47, May). This well is located immediately northeast and downgradient of Pit 3.

Historic data indicate that ground water nitrate concentrations in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs are limited in extent and relatively stable. Overall, maximum nitrate concentrations in Building 850 ground water have decreased from the historic maximum of 363 mg/L (2003). Other than the anomalous 2010 data described above, the distribution and concentrations of nitrate in ground water this semester are generally similar to what was observed in 2010.

#### *2.5.5.2.4. Perchlorate Concentrations and Distribution*

During the first semester 2011, perchlorate was detected at concentrations exceeding the 6 µg/L cleanup standard in ground water samples from 13 wells directly northeast and southeast of the landfills.

Perchlorate concentrations in the Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 40 µg/L (June 2009) to a first semester 2011 concentration of 13 µg/L, in the May sample from well W-PIT-2305, immediately downgradient of Pit 3. The 2010 maximum of 27 µg/L and the historic maximum concentrations were detected in samples from well W-PIT7-2306, also located directly downgradient of Pit 3. The Qal/WBR HSU wells that yielded samples containing perchlorate in excess of the 6 µg/L cleanup standard define an area that extends southeast about 1,200 ft from the middle of Pit 3.

Samples from two $Tnbs_1/Tnbs_0$ HSU wells, NC7-25, and NC7-68, contained perchlorate at concentrations in excess of the 6 µg/L cleanup standard (9.2 and 11.6 µg/L, April) and define an area that extends about 1,000 ft southeast along the edges of Pits 3 and 5.

The overall extent of perchlorate in ground water in the Pit 7 Complex area did not change significantly from 2010 to 2011.

#### *2.5.5.2.5. VOC Concentrations and Distribution*

The VOC COCs in Pit 7 Complex Area ground water include TCE and 1,1-DCE.

During the first semester 2011, VOCs were detected in ground water samples from four Pit 7 Complex area wells: one well completed in the $Tnbs_1/Tnbs_0$ HSU (K7-03), and three completed in both HSUs (K7-01, W-PIT-2305, and W-PIT7-2307).

The maximum first semester 2011 total VOC concentration in a sample from a Pit 7 Complex well was 9.3 µg/L (W-PIT7-2307, April). This sample contained 6.5 µg/L of TCE; exceeding the TCE cleanup standard of 5 µg/L, and 2.8 µg/L of 1,1-DCE which was below the 1,1-DCE cleanup standard of 6 µg/L. Last year, this well also yielded the maximum total VOC concentration in the area (11.8 µg/L, January). TCE was detected in a sample from Qal/WBR- $Tnbs_1/Tnbs_0$ HSU well K7-01 at a concentration of 1.2 µg/L; 1,1-DCE was not detected the sample from K7-01 above the 0.5 µg/L reporting limit.

Total VOC concentrations in Qal/WBR HSU ground water in the Pit 7 Complex area have decreased from a historic maximum of 21.2 µg/L in March 1995 (well NC7-51) to a 2010 maximum of 8 µg/L in October (Well W-PIT7-2306). This well was not sampled during the first semester 2011. The maximum first semester 2011 total VOC concentration in a sample from a well screened in the

Qal/WBR HSU was 1.2 µg/L (K7-01, May), which was comprised entirely of TCE. 1,1-DCE was not detected the sample from K7-01 or any other wells screened in the Qal/WBR HSU above the 0.5 µg/L reporting limit.

The maximum 2010 total VOC concentration in a sample from a well screened in the $Tnbs_1/Tnbs_0$ HSU was 0.91 µg/L (K7-03, April), which was comprised entirely of TCE. 1,1-DCE was not detected the sample from K7-01 or any other wells screened in the $Tnbs_1/Tnbs_0$ HSU above the 0.5 µg/L reporting limit.

The data indicate that the extent of VOCs in ground water is limited to the area directly downgradient of Pit 5. Individual VOC concentrations were below cleanup standards in all wells sampled during the first semester, except for well W-PIT7-2307 that yielded a sample with TCE concentrations slightly above the 5 µg/L cleanup standard.

#### *2.5.5.3. Pit 7 Complex Area of OU 5 Remediation Optimization Evaluation*

Ground water extraction and treatment at the PIT7-SRC facility began in March 2010. Therefore, the operation timeframe (1 year and 4 months) and associated hydraulic and chemical data from the area are still insufficient to assess the effects of ground water extraction and treatment on COC concentration trends and the performance of the extraction wellfield. A more complete analysis of remediation optimization will be presented in the 2011 Annual CMR report. The total volume of extracted and treated water during the first semester 2011 at PIT7-SRC was about 25,100 gallons. Wells W-PIT7-2305 and W-PIT7-2307 contributed over 54% and 43% of the flow to the PIT7-SRC facility at average long-term extraction rates of <0.1 and 0.1 gpm, respectively, to the treatment facility. Concentrations of COCs in well W-PIT7-2305 ground water have fluctuated since pumping started in 2010, but have shown a general decreases from pre-pumping conditions to the first semester 2011. For example, tritium activities decreased from 73,900 pCi/L (January 2010) to 51,300 pCi/L (April 2011), uranium activities decreased from 21 pCi/L (January 2010) to 17.4 pCi/L (April 2011), TCE concentrations decreased from 0.88 µg/L (January 2010) at 0.52 µg/L (April 2011), perchlorate concentrations decreased from 15 µg/L (June 2009) to 13 µg/L (April 2011), and nitrate concentrations decreased from 44 mg/L (August 2008) to 41 mg/L (April 2011). Similar to extraction well W-PIT7-2305, concentrations of COCs in well W-PIT7-2305 ground water have fluctuated since pumping started in 2010, but have shown slight general decreases from pre-pumping conditions to the first semester 2011. For example, tritium activities decreased from 66,600 pCi/L (June 2010) to 41,200 pCi/L (April 2011), uranium activities decreased from 24.7 pCi/L (January 2010) to 11.8 pCi/L (April 2011), TCE concentrations decreased from 8.3 µg/L (January 2010) at 6.5 µg/L (April 2011), and nitrate concentrations decreased from 34 mg/L (June 2010) to 26 mg/L (April 2011). Perchlorate concentrations have remained stable at 11 µg/L (January 2010 and April 2011.) After assessment of water levels and COC trends in well W-PIT7-2307, it appears that ground water pumped to date, is derived primarily from the $Tnbs_1/Tnbs_0$ bedrock HSU. Because the well may have been largely pumping from the $Tnbs_1/Tnbs_0$ HSU, pumping was suspended in early March 2011 to avoid pulling contaminants in Qal/WBR HSU ground water into the $Tnbs_1/Tnbs_0$ HSU. Ground water elevations have steadily risen since pumping ceased and were still below the contact between coherent bedrock and the Qal/WBR HSU as defined by the seismic velocity boundary. Well W-PIT7-2305 has been pumping almost continuously during the semester, except for a period at the end of March and the beginning of April. Wells NC7-63 and NC7-64 were pumping, with very low yields, until the water lines to the GWTF were disconnected (around April 16, 2011) in preparation for drilling the three new extraction wells in the Pit 7 area. The increase in tritium activity in ground water from NC7-63 from 2010 to this semester (255,000 pCi/L to 575,000 pCi/L) is discussed in Section 2.5.5.2.1. Well W-PIT7-2306 has not been pumped since 2010 due to insufficient water.

To increase plume capture and the volume of water containing concentrations of COCs in excess of cleanup standards, three additional extraction wells (W-PIT7-2703, W-PIT7-2704, and W-PIT7-2705) with locations shown on Figure 2.5-1 were installed during the first semester 2011 near the highest concentrations of uranium and perchlorate in the Qal/WBR HSU. The wells were drilled to the base of the Qal/WBR and completed with 12-inch diameter casing with screens extending to the base of this HSU. Following final well development, baseline chemical samples will be collected from the wells. In the long term, continued pumping of existing extraction wells, pumping of these new wells (once connected in early 2012), the effects of the drainage diversion system, and rainfall hydrographs will be evaluated as to their overall influence on the extent of saturation in the Qal/WBR HSU, and in turn, the distribution of ground water available for treatment at PIT7-SRC.

#### *2.5.5.4. Pit 7 Complex Area of OU 5 Remedy Performance Issues*

There were no new issues that affect the performance of the cleanup remedy (MNA) for tritium in the Pit 7 Complex area during this reporting period. The remedy for tritium continues to be effective and protective of human health and the environment, and to make progress toward cleanup. Uranium, perchlorate, VOCs, and nitrate in Pit 7 Complex ground water continue to be closely monitored. As stated in the previous section, wells W-PIT7-2305 and W-PIT7-2307 pumped the vast majority of ground water to PIT7-SRC, and concentrations of tritium and uranium in samples collected from these wells remained similar to 2010. Uranium activities in these samples remained below cleanup standards. Continued operation of PIT7-SRC and the installation of three new extraction wells this semester provides an opportunity for extraction of increased volumes of ground water and mass removal.

During the first semester 2011, tritium activities in treated effluent from PIT7-SRC were in the range of 52,000 to 63,000 pCi/L, which is equivalent to recent tritium activities in samples from wells completed adjacent to the infiltration trench (wells K7-01, NC7-16, and NC7-21). Since treatment and re-injection began, ground water tritium activity trends at these wells are stable or decreasing. The tritium activities in these wells will continue to be closely monitored to assess any negative impacts to the distribution of tritium in ground water.

As discussed in the Remedial Design (RD) for the Pit 7 Complex (Taffet et al., 2008), the drainage diversion system design was not intended to capture 100% of the precipitation that fall in the Pit 7 Complex area. Rather, it was designed to divert excess surface water runoff and shallow subsurface water from the hillslopes to the west and east of the Pit 7 Complex landfills during high intensity storms and periods of extreme rainfall (i.e., the 1997-1998 El Niño) to prevent ground water from coming in contact with the pit waste and underlying contaminated bedrock. Thus, the drainage diversion system performance can best be evaluated during an El Niño season or other period of very high rainfall. Ground water elevations in the Qal/WBR HSU in the Pit 7 Complex generally increased 2 to 3 ft following the above-average 2009-2010 rainfall. This was expected, as the drainage diversion system is not designed to prevent water level rises but to minimize the influence of extreme storm events by diverting excess runoff and shallow subsurface flow during very heavy rainfall years (i.e., El Niño events) to prevent water tables rises into the landfills. During and following the 2009-2010 rainfall period, including this semester, ground water levels remained well below the bottoms of the Pit 7 Complex Landfills.

Indications that the drainage diversion system is not operating as intended include all of the following criteria documented in the Pit 7 RD:

- Ground water elevation responses to rainfall events observed in key monitoring wells are similar to those observed before the installation of the drainage diversion system,
- Maximum ground water rises into the pit waste and underlying contaminated bedrock as indicated by ground water elevation data, and

- Increasing trends in tritium, uranium, VOCs, or perchlorate activities/concentrations are observed over a period of at least four quarters in ground water samples from key wells downgradient of the landfills.

The 14 drainage diversion system performance monitor wells were outfitted with dedicated pressure transducers that measure ground water elevations in April 2010. These data will be evaluated at the end of the 2010-2011 rainfall season and the results reported in the 2011 Annual CMR. Based the evaluation of data collected in 2010 and this semester against the performance criteria, the drainage diversion system appears to be operating as intended.

## 2.6. Building 854 OU 6

The Building 854 Complex has been used to test the stability of weapons and weapon components under various environmental conditions and mechanical and thermal stresses. A map of the Building 854 OU showing the locations of monitoring and extraction wells and treatment facilities is presented on Figure 2.6-1.

Three GWTSs are currently operated in the Building 854 OU; Building 854-Source (854-SRC), Building 854-Proximal (854-PRX), and Building 854-Distal (854-DIS). One SVTS is also operated at the 854-SRC facility.

The 854-SRC GWTS began operation in December 1999 removing VOCs and perchlorate from ground water. Ground water extraction was expanded in September 2006 from one well, W-854-02, extracting at a flow rate of approximately 1 gpm, to include wells W-854-18A, W-854-17, and W-854-2218 currently extracting at an approximate combined flow rate of 1.7 gpm. The GWTS configuration includes a particulate filtration system, two ion-exchange resin columns connected in series for perchlorate removal, and three aqueous-phase GAC units connected in series for VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower onto the landscape for uptake and utilization of the nitrate by indigenous grasses.

A SVTS began operation at the 854-SRC in November 2005. Soil vapor is currently extracted from well W-854-1834 at an approximate flow rate of 45 to 50 scfm. This system consists of vapor-phase GAC to remove VOCs from extracted soil vapor. Treated vapors are discharged to the atmosphere under permit issued by the San Joaquin Valley Unified Air Pollution Control District.

The 854-PRX GWTS began operation in November 2000 removing VOCs, nitrate, and perchlorate from ground water. Ground water is currently extracted at an approximate flow rate of 1.5 gpm from well W-854-03, located southeast of the Building 854 complex. The GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate removal, three aqueous-phase GAC units connected in series for VOC removal, and aboveground containerized wetland biotreatment for nitrate removal prior to being discharged into an infiltration trench. In 2007, the treatment system was modified to replace the solar power with site power to increase the volume of extracted ground water by operating the GWTS 24-hours a day.

The 854-DIS GWTS is solar-powered and began operation in July 2006 removing VOCs and perchlorate from ground water. Ground water is extracted from well W-854-2139. The current operational flow rate averaged over time is approximately 700 to 800 gallons per month. The GWTS configuration includes two ion-exchange resin columns connected in series for perchlorate treatment followed by three aqueous-phase GAC units connected in series for VOC removal prior to discharge to an infiltration trench.

### 2.6.1. Building 854 OU Ground Water Treatment System Operations and Monitoring

This section is organized into five subsections: facility performance assessment; operations and maintenance issues; receiving water monitoring; compliance summary; and sampling plan evaluation and modifications.

#### *2.6.1.1. Building 854 OU Facility Performance Assessment*

The monthly ground water discharge volumes and rates and operational hours are summarized in Tables 2.6-1 through 2.6-3. The total volume of ground water treated and masses removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water treated and discharged and the masses removed are summarized in Table Summ-2.

Analytical results for influent and effluent samples are shown in Tables 2.6-4 and 2.6-5. The pH measurement results are presented in Appendix A.

#### *2.6.1.2. Building 854 OU Operations and Maintenance Issues*

The following maintenance activities and operational issues occurred at the 854-SRC GWTS and SVTS, and 854-PRX and 854-DIS GWTSs during the reporting period:

<u>854-SRC GWTS and SVTS</u>

- Extraction well W-854-18A remained off until February 3 and was shut down again until March 7 to prevent damage from freezing temperatures.
- A GAC change-out was performed on January 10.
- The GWTS shut down on February 7 due to electrical problems with the system's control panel. The system was repaired and restarted on February 11.
- The perchlorate ion-exchange resin was changed on April 13.
- The SVTS was shut down on November 22 to prevent damage from freezing temperatures and remained shut down while a new condensate knockout skid was constructed and a vapor rebound test was conducted. The SVTS was restarted on May 31. The system was shut down on June 7 for further vapor rebound test evaluation.

<u>854-PRX GWTS</u>

- The GWTS was shut down on November 17, 2010 to prevent damage from freezing temperatures and remained shut down during the winter-early spring due to cold weather that inhibited bacterial denitrification. In addition, the thick growth of Tulle plants in the BTU had limited its flow-through capacity. While the system was shut down, the BTU was cleaned out and the vegetation removed to improve flow-through capacity and reduce the potential for rainwater overflow. The system was restarted operating in batch mode. Approximately 2,500 gallons of water were treated in 500-gallon batches, with the treated effluent contained in a storage tank until sample analysis confirmed that nitrate had been reduced to meet effluent limits. Direct discharge of treated effluent to the infiltration trench began on May 11.

<u>854-DIS GWTS</u>

- The GWTS was shut down from November 22, 2010 to February 3, 2011 to prevent damage from freezing temperatures.

#### *2.6.1.3. Building 854 OU Compliance Summary*

The 854-SRC, 854-PRX, and 854-DIS GWTSs all operated in compliance with the RWQCB Substantive Requirements for Wastewater Discharge. Nitrate concentrations in the 854-PRX GWTS extraction well and facility influent have remained below the 45 mg/L nitrate cleanup standard since February 2010. The 854-SRC SVTS operated in compliance with San Joaquin Valley Unified Air Pollution Control District permit limitations.

#### *2.6.1.4. Building 854 OU Facility Sampling Plan Evaluation and Modifications*

The Building 854 OU facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.6-6. The only modifications to the plan included no compliance-monitoring samples were collected in January, February, and March from the 854-PRX and in January from 854-DIS GWTSs because the GWTSs were shut down for freeze protection.

#### *2.6.1.5. Building 854 OU Treatment Facility and Extraction Wellfield Modifications*

There were no treatment facility or extraction wellfield modifications made to the 854-PRX, 854-DIS, or 854-SRC GWTSs, or the 854-SRC SVTS, during the reporting period.

### 2.6.2. Building 854 OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.6-7. This table also delineates and explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions: eighteen required analyses were not performed because there was insufficient water in the wells to collect the samples and three required analyses were not performed due to an inoperable pump.

### 2.6.3. Building 854 OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; analysis of contaminant distribution and concentration trends; remediation optimization evaluation; and performance issues.

#### *2.6.3.1. Building 854 OU Mass Removal*

The monthly ground water mass removal estimates are summarized in Tables 2.6-8 through 2.6-10. The total mass removed during this reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

#### *2.6.3.2. Building 854 OU Contaminant Concentrations and Distribution*

At the Building 854 OU, VOCs (TCE) and perchlorate are the primary COCs detected in ground water; nitrate is a secondary COC. These COCs have been identified primarily in the $Tnbs_1/Tnsc_0$ HSU.

##### *2.6.3.2.1. VOC Concentrations and Distribution*

During the first semester 2011, the maximum concentration of total VOCs in $Tnbs_1/Tnsc_0$ HSU ground water was 110 µg/L (W-854-02, January and April). TCE comprises all of the total VOCs observed in ground water at Building 854, except for low cis-1,2-DCE concentrations detected in samples from wells W-854-17 and W-854-2139. The maximum cis-1,2-DCE ground water concentration detected in wells W-854-17 and W-854-2139 during the first semester 2011 was 7.6 µg/L and 0.72 µg/L, respectively. Overall, total VOC concentrations in the $Tnbs_1/Tnsc_0$ HSU have decreased nearly two orders of magnitude from a historic pre-remediation maximum of 2,900 µg/L (W-854-02, 1997). Two VOC plumes exist in the $Tnbs_1/Tnsc_0$ HSU: a northern plume and a less extensive southern plume. The northern plume encompasses the 854-SRC and 854-PRX areas and is separated from the southern plume by a region where VOC concentrations are below the 0.5 µg/L reporting limit (at wells W-854-1902 and W-854-1822). The southern plume is in the vicinity of former water supply Well 13. While the extent of VOCs impacting Building 854 ground water with concentrations above the 0.5 µg/L reporting limit has remained relatively stable over time, since remediation began: (1) the portion of the northern VOC plume with concentrations greater than 50 µg/L has decreased and is currently limited to the immediate vicinity of the source area; (2) the extent of the northern VOC plume with concentrations greater than 10 µg/L has decreased; and (3) the extent of the southern VOC plume with concentrations greater than 5 µg/L has decreased significantly. VOCs were also detected in shallow perched ground water in well W-854-10 (screened in the $Tnbs_1$ unit but above the $Tnbs_1/Tnsc_0$ HSU) located in the Building 854 source area during 2008, 2009, 2010, and 2011 at maximum concentrations of 34, 17, 41, and 8.9 µg/L (first semester 2011), respectively. The long-term total VOC concentrations in ground water at this well exhibit a slightly increasing trend with intermittent decreases. The recent intermittent increases and declines in total VOC concentrations roughly correlate with declines and increases in water elevations in excess of 1 ft over a 3 month period suggesting that total VOC concentrations in this thin perched water-bearing zone are diluted by intermittent recent recharge events. During the first semester 2011, as in 2010, VOCs were not detected in the sample from well W-854-14, located near Building 858 and screened in a perched zone in the $Tnbs_{1,}$ also above the $Tnbs_1/Tnsc_0$ HSU. During the first semester 2011, as in 2010, VOCs were not detected in the sample from the one Qls well, W-850-15, that contained water

#### *2.6.3.2.2. Perchlorate Concentrations and Distribution*

The maximum perchlorate concentrations in $Tnbs_1/Tnsc_0$ HSU ground water are generally decreasing from the historic maximum of 27 µg/L in 2003 to a first semester 2011 maximum of 15.9 µg/L. Both the historic and recent maximum perchlorate concentrations were detected in well W-854-1823, located downgradient of the 854-PRX facility.

Overall, the distribution of perchlorate in ground water is similar to its extent in 2009-2010. During the first semester 2011, perchlorate was not detected in ground water samples from any well screened in the Qls HSU or perched $Tnbs_1$ water-bearing zones. In 2010, 6.1 µg/L of perchlorate were reported in the sample from Qls HSU well W-854-15, but was not detected above the 4 µg/L reporting limit in the first semester 2010 sample or this semester's sample.

#### *2.6.3.2.3. Nitrate Concentrations and Distribution*

During the first semester 2011, the maximum nitrate concentration in $Tnbs_1/Tnsc_0$ HSU ground water was 50 mg/L (extraction well W-854-02, April). Additionally, during this semester, nitrate was detected above the cleanup standard in the sample from well W-854-14, screened in the perched $Tnbs_1$ water-bearing zone (180 mg/L, June) located near Building 858. The continued presence of elevated nitrate in samples from well W-854-14 could be due to impact from the Building 858 septic system. Geochemical data (nitrogen and oxygen isotopes) collected in the Building 854 OU, including Springs 10 and 11, as part of the Site 300 nitrate MNA study indicated some evidence of *in situ* denitrification in Neroly Formation ground water. The distribution of nitrate in the $Tnbs_1/Tnsc_0$ HSU in the distal area remains low and essentially unchanged since this study was conducted. Nitrate was also detected at a concentration above the 45 mg/L cleanup standard (60 mg/L) in the sample from well W-854-05, which is screened in the Qls HSU immediately north of the VOC source area. Nitrate was not detected above the cleanup standard in the sample from the well (W-854-10), screened in the perched $Tnbs_1$ water-bearing zone near the VOC source area.

#### *2.6.3.3. Building 854 OU Remediation Optimization Evaluation*

The 854-SRC GWTS operated throughout the first semester 2011, except from February 7 until February 11 due to electrical problems with the control panel. Since the 2006 expansion of the 854-SRC GWTS wellfield, the total volume of extracted ground water and contaminant mass removed has increased significantly. Ground water extraction continues to adequately capture the highest VOC concentrations. Well W-854-2218 can be pumped at a higher sustainable yield and future optimization efforts at 854-SRC will include increased pumping of this extraction well. Increased pumping would add to the total volume of 854-SRC effluent discharged.

The 854-SRC SVTS operated throughout the first semester 2011, except for a period from November 17, 2010 until May 31. The system was offline initially to protect against potential damage caused by freezing temperatures, then for construction of a new condensate knockout skid and for a vapor rebound test, and after June 7 to continue rebound testing. Prior to initiating rebound testing, total VOC concentrations (all TCE) in the October 2010 vapor sample from well W-854-1834 had declined to 0.035 $ppm_{v/v.}$ The maximum historic TCE vapor concentration measured in well W-854-1834 was 4.4 $ppm_{v/v}$ (November 2005). By May 31, 2011, TCE concentrations had rebounded to 0.12 $ppm_{v/v}$, at which time, vapor extraction re-commenced. The maximum first semester 2011 TCE vapor concentration of 0.42 $ppm_{v/v}$ was measured from well W-854-1834 on June 7. At this time, the system was again shut down for further vapor rebound test evaluation. During the first semester 2011, the 854-SRC SVTS removed 0.031 kg of VOC vapor mass, compared to 0.80 kg, removed during 2010. The lower mass removed during the first semester 2011 is attributed to the long period of non-operation. When operating, VOC mass continues to be removed from the source area due to relatively high vapor flow rates. This VOC mass is likely volatilizing from vadose zone sources beneath the Building 854 source area and VOC vapors from the underlying dissolved VOC plume in $Tnbs_1/Tnsc_0$ ground water.

The 854-PRX GWTS did not operate during the period from after November 22, 2010 until April 2011 to protect against potential damage caused by freezing temperatures. Construction activities supporting full-time operation of 854-PRX were completed in September 2007, increasing overall extraction capacity and the extraction flow rate from well W-854-03 to 1.4 gpm. During the first semester 2011, the 854-PRX GWTS removed 0.004 kg of VOC mass. In 2010, the GWTS removed 0.019 kg of VOC mass.

The 854-DIS GWTS operated throughout the semester except for the period from November 22, 2010 to February 3 to protect against potential damage caused by freezing temperatures. During the first semester 2011, the 854-DIS GWTS removed 0.0064 kg of VOC mass. In 2010, the GWTS removed 0.0012 kg of VOC mass. The single extraction well at the 854-DIS GWTS (W-854-2139) pumps at a low average rate of approximately 750 gallons per month because the well becomes rapidly dewatered and cannot sustain prolonged pumping.

#### *2.6.3.4. Building 854 OU Remedy Performance Issues*

There were no new issues that affect the performance of the cleanup remedy for the Building 854 OU during this reporting period. The overall remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup.

## 2.7. Building 832 Canyon OU 7

Building 832 Canyon facilities were used to test the stability of weapons and associated components under various environmental conditions. Contaminants were released from Buildings 830 and 832 through piping leaks and surface spills during testing activities at these buildings.

Three GWTSs and two SVTS are operated in the Building 832 Canyon OU: Building 832-Source (832-SRC), Building 830-Source (830-SRC), and Building 830-Distal South (830-DISS). The 832-SRC and 830-SRC facilities extract and treat both ground water and soil vapor, while the 830-DISS facility extracts and treats ground water only.

A map of Building 832 OU showing the locations of monitoring and extraction wells and treatment facilities is presented on Figure 2.7-1.

The 832-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in September and October 1999, respectively. Initially, ground water was extracted from nine wells at a combined total flow rate that initially ranged from 30 to 300 gpd. The total flow eventually dropped to 5 to 50 gpd due to lowering of the water table by pumping. In early 2005, the source area extraction wellfield was reduced to two wells (W-832-12 and W-832-15) operating with vacuum enhancement and a combined flow rate ranging from 60 to 220 gpd. In late 2005, the extraction wellfield was expanded to include three additional downgradient wells (W-832-01, W-832-10, and W-832-11). As a result, the combined flow rate increased to about 1,300 gpd, and VOC concentrations in 832-SRC facility influent increased four-fold. Well W-832-25 was connected to 832-SRC in July 2006. Currently, ground water is extracted from wells W-832-01, W-832-10, W-832-11, W-832-12, W-832-15 and W-832-25 at an approximate combined flow rate of 0.16 gpm. Soil vapor is extracted from wells W-832-12 and W-832-15 at an approximate combined flow rate of approximately 3.0 to 4.4 scfm. The current GWTS configuration includes a Cuno filter for particulate filtration, two ion-exchange resin columns connected in series to remove perchlorate, and three aqueous-phase GAC units (also connected in series) to remove VOCs. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses. A positive displacement rotary lobe blower is used to create a vacuum at selected wellheads through a system of piping manifolds. The contaminated vapors are treated using three vapor-phase GAC units connected in series. Treated soil vapors are then discharged to the atmosphere under a permit issued by the San Joaquin Valley Unified Air Pollution Control District.

The 830-SRC GWTS removes VOCs and perchlorate from ground water and the SVTS removes VOCs from soil vapor. The GWTS and SVTS began operation in February and May 2003, respectively. Ground water was extracted from four wells at a total flow rate ranging from 5 to 100 gpd. The 830-SRC extraction wellfield was expanded in 2006; seven GWTS extraction wells (W-830-49, W-830-1829, W-830-2213, W-830-2214, W-830-57, W-830-60, and W-830-2215) were added to the original three (W-830-1807, W-830-19, and W-830-59). The expansion well testing began in 2006. The tests were completed and the expanded wellfield was in full operation during the first semester 2007. During the second semester 2009, both wells W-830-1829 and W-830-2213 were converted back to monitor wells due to lack of water for extraction. In early 2010, the 830-SRC GWTS was modified so that ground water extracted from higher flow extraction wells (W-830-2215, W-830-60, and W-830-57) was routed around the 830-SRC ion-exchange canisters. Perchlorate has not been detected above the detection limit (4 µg/L) since 2005 in these wells. This bypass is expected to improve the operation of the treatment facility by decreasing backpressure, allowing for increased ground water flow and mass removal rates. Ground water extracted from low-flow $Tnsc_{1a}$ well W-830-2214 still contains perchlorate above the discharge limit; this well does not bypass the perchlorate treatment system. The 830-SRC GWTS is currently extracting ground water at a combined flow rate of approximately 5 to 7 gpm. The GWTS configuration includes a Cuno filter for particulate filtration, two ion-exchange resin columns connected in series to remove perchlorate, and three in series aqueous-phase GAC units to remove VOCs. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses. The 830-SRC soil vapor extraction wellfield was also expanded to include well W-830-49 in 2006. Soil vapor is extracted from wells W-830-1807 and W-830-49 using a liquid ring vacuum pump at a current combined flow rate of approximately 30 to 33 scfm. The contaminated vapors are treated using three vapor-phase GAC units connected in series. Treated soil vapors are then discharged to the atmosphere under a permit issued by the San Joaquin Valley Unified Air Pollution Control District.

The 830-DISS GWTS began operation in July 2000 removing VOCs, perchlorate, and nitrate from ground water. Approximately 1 gpm of ground water was extracted from three wells (W-830-51, W-830-52, and W-830-53) using natural artesian pressure. The GWTS configuration consisted of a Cuno filter for particulate filtration, two aqueous-phase GAC units in series to remove VOCs, two in-series ion-exchange resin columns to remove perchlorate, and three bioreactor units for nitrate reduction. These units were open-container wetland bioreactors containing microorganisms that use nitrate during cellular respiration. Acetic acid was added to the process stream as a carbon source. Treatment system effluent was discharged via a storm drain that discharges to the Corral Hollow alluvium. At the request of the RWQCB, the facility was modified during the first semester 2007 to cease discharge of treated water to a surface water drainage way. The modification included the addition of a fourth well, W-830-2216, to the extraction wellfield. The GWTS is now extracting ground water at a combined flow rate of approximately 2 to 3 gpm. Currently, extracted ground water flows through ion-exchange canisters to remove perchlorate at the 830-DISS location. The water is piped to the Central GSA GWTS for VOC removal. Nitrate-bearing treated effluent is then discharged via a misting tower over the landscape for uptake and utilization of the nitrate by indigenous grasses.

### 2.7.1. Building 832 Canyon OU Ground Water and Soil Vapor Extraction and Treatment System Operations and Monitoring

This section is organized into four subsections: facility performance assessment; operations and maintenance issues; compliance summary; and sampling plan evaluation and modifications.

#### *2.7.1.1. Building 832 Canyon OU Facility Performance Assessment*

The monthly ground water and soil vapor discharge volumes, rates, and operational hours are summarized in Tables 2.7-1 through 2.7-3. The total volume of ground water and vapor extracted and treated and mass removed during the reporting period are presented in Table Summ-1. The cumulative volume of ground water and soil vapor treated and discharged and mass removed are summarized in Table Summ-2. Analytical results for influent and effluent samples are shown in Tables 2.7-4 and 2.7-5. The pH measurement results are presented in Appendix A.

#### *2.7.1.2. Building 832 Canyon OU Operations and Maintenance Issues*

The following maintenance activities and operational issues occurred at the 832-SRC GWTS and SVTS, 830-SRC GWTS and SVTS, and 830-DISS GWTS during the reporting period:

<u>830-SRC GWTS and SVTS</u>

- Extraction wells W-830-19, W-830-59, and W-830-2214 were shut down on November 22, 2010 to prevent damage from freezing temperatures and were restarted on February 2 and 3. The extraction wells W-830-19, W-830-49, W-830-59, and W-830-2214 were shut down on February 22 to prevent freeze damage and were restarted March 14.
- The pump in extraction well W-830-2215 failed and was replaced on January 6.
- The extraction well W-830-60 pump failed on January 24.
- The GWTS shut down on March 21 as a result of a failed transformer that caused a power outage to the system. The SVTS was already shut down since December 9 to replace the condensate drum. The power pole, transformer, blown fuses, and input module were repaired

and both systems were restarted on April 5. The systems were shut down on April 6 to repair an interlock for the misting tower tank, and the misting tank pump was replaced on May 3. Approximately 2,000 feet of rodent damaged wiring was also replaced. The systems were restarted on May 16. When the pump in the transfer tank for extraction wells W-832-10, -11, and 25 started up, a pressure switch shut the system off. The high flow wells, W-830-2215, W-830-2214 and W-830-57 were shut down. The systems were found offline on May 17. The pressure switch for GAC canisters was adjusted to 60 pounds per square inch (psi) and the facility high flow alarm set point was increased to 20 gpm. The system was restarted on May 18 and ran until May 19 when the system was manually shutdown for maintenance. The systems were restarted on May 23 after misting tower maintenance was completed. Misting was switched to the Upper Tower.

- The SVTS was shut down on June 22 due to a wiring malfunction associated with the pumps in the dual-phase extraction wells W-830-49 and W-830-1807. On June 29, the GWTS and SVTS were shut down due to electrical issues.

<u>832-SRC GWTS and SVTS</u>

- The SVTS water knock-out drum failed on November 18, 2010 causing the SVTS to be shut down. The GWTS was also shut down at this time for freeze protection. The GWTS was restarted on February 3 except extraction well W-832-11. The pump in extraction well W-832-11 was replaced and restarted on February 9. Extraction well W-832-25 was shutdown on February 14 due to damage caused by freezing temperatures. The GWTS was shut down on February 22 to prevent additional freeze damage and restarted March 14 including extraction well W-832-25. A new condensate knockout drum was installed on March 16 and the SVTS was restarted March 28. The pump in well W-832-12 was repaired on March 29.

<u>830-DISS GWTS</u>

- Extraction well W-830-2216 was shut down on November 22, 2010 to prevent damage from freezing temperatures. The system continued to operate on the artesian wells until the system shut down on December 20 due to the compressor failure at the Central GSA. The compressor was repaired and the system was restarted on February 3. The extraction well W-830-2216 was shut down on February 22 to prevent freeze damage and restarted March 7.

#### *2.7.1.3. Building 832 Canyon OU Compliance Summary*

The 830-SRC, 832-SRC, and 830-DISS GWTSs operated in compliance with RWQCB Substantive Requirements during the reporting period. The 830-SRC SVTS operated in compliance with the San Joaquin Valley Unified Air Pollution Control District permit limitations.

#### *2.7.1.4. Building 832 Canyon OU Facility Sampling Plan Evaluation and Modifications*

The Building 832 Canyon OU treatment facility sampling and analysis plan complies with the monitoring requirements in the CMP/CP. The sampling and analysis plan is presented in Table 2.7-6. The only modifications made to the plan during this reporting period included no compliance monitoring samples were collected in January from 832-SRC due to being shut down for freeze protection.

#### *2.7.1.5. Building 832 Canyon OU Treatment Facility and Extraction Wellfield Modifications*

No treatment facility or wellfield modifications were made to any of the OU 7 GWTSs or SVTSs during this reporting period.

### 2.7.2. Building 832 Canyon OU Ground Water Monitoring

The sampling and analysis plan for ground water and surface water monitoring is presented in Table 2.7-7. This table explains deviations from the sampling plan and indicates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; twenty-seven required analyses were not performed because there was insufficient water in the wells to collect the samples and eleven required analyses were not performed due to inoperable pumps.

### 2.7.3. Building 832 Canyon OU Remediation Progress Analysis

This section is organized into four subsections: mass removal; contaminant concentrations and distribution; remediation optimization evaluation; and performance issues.

#### *2.7.3.1. Building 832 Canyon OU Mass Removal*

The monthly ground water and soil vapor mass removal estimates are summarized in Tables 2.7-8 through 2.7-10. The total masses removed during this reporting period and cumulative mass estimates are summarized in Table Summ-1 and Table Summ-2, respectively.

#### *2.7.3.2. Building 832 Canyon OU Contaminant Concentrations and Distribution*

At the Building 832 Canyon OU, VOCs (mainly TCE) are the primary COCs detected in ground water, but also include cis-1,2-DCE at Buildings 830 and 832 and chloroform and PCE at Building 830. Perchlorate and nitrate are the secondary COCs. These constituents have been identified primarily in the Qal/WBR, $Tnsc_{1b}$, and $Tnsc_{1a}$, HSUs. VOCs have also been detected at low concentrations in Building 832 Canyon in the $Tnbs_2$ and Upper $Tnbs_1$ HSUs.

##### *2.7.3.2.1. VOC Concentrations and Distribution*

Historically, ground water samples from wells located in the Building 830 source area have contained the highest total VOC concentrations in the Qal/WBR HSU. Total VOC concentrations in Qal/WBR HSU ground water near 830-SRC have decreased by an order-of-magnitude from a historic maximum of 10,000 µg/L (SVI-830-035) in 2003 to a first semester 2011 maximum concentration of 880 µg/L (SVI-830-035, February). VOCs detected in Building 830 area ground water consist primarily of TCE. PCE, cis-1,2-DCE, trans-1,2-DCE (1 well), 1,2-DCA, chloroform, and 1,1,2-TCA (one well) were also detected at concentrations above the reporting limit; but only trans-1,2-DCE was detected at concentrations above its MCL.

Since remediation began in the Building 832 source area in 1999, total VOC concentrations in wells screened in the Qal/WBR HSU have decreased from a historic maximum of 1,800 µg/L (W-832-18) in 1998 to a first semester 2011 maximum concentration of 130 µg/L (W-832-18, March). Ground water samples for VOC analyses were not collected during the first semester 2011 from a few wells completed in the Qal/WBR and $Tnsc_{1b}$ HSUs because the water table dropped below the screened intervals. VOCs detected in Building 832 area ground water consist primarily of TCE. Cis-1,2-DCE, chloroform, and Freon 11 were also detected at concentrations above the reporting limit; but concentrations of these VOCs were all below their MCL cleanup standard .

Total VOC concentrations in ground water samples taken from Qal/WBR HSU guard wells W-35B-01 and W-880-02 located south of Building 832 Canyon near the Site 300 southern boundary were both below reporting limits (<0.5 µg/L). Total VOC concentrations in these wells have decreased from a historic maximum of 1.9 µg/L (W-35B-01) in 2001.

Since remediation began in 2000 in the Building 830 source area, total VOC concentrations in ground water in the $Tnsc_{1b}$ HSU have decreased from a historic maximum of 13,000 µg/L (W-830-49) in 2003 to a first semester 2011 maximum of 3,600 µg/L (W-830-19, April). Although remediation efforts in the $Tnsc_{1b}$ HSU have been effective in decreasing the areas of highest concentrations, the overall extent of VOCs in this HSU has not changed significantly over the past several years due to limited recharge and low ground water yields.

At the 830-DISS treatment facility, total VOC concentrations in $Tnsc_{1b}$ HSU artesian wells W-830-51, W-830-52, and W-830-53, have decreased from a historic maximum of 170 µg/L in 2002 to a first semester 2011 maximum concentration of 31 µg/L (W-830-53, January). Farther south along Building 832 Canyon, the leading edge of the $Tnsc_{1b}$ VOC plume continues to be contained within Site 300 boundary based on total VOC concentrations below the 0.5 µg/L reporting limit in guard wells W-830-1730 and W-4C.

Since remediation of the $Tnsc_{1a}$ HSU began in early 2007, total VOC concentrations in ground water have decreased from a historic maximum of 1,700 µg/L (W-830-27, 1998) to a first semester 2011 maximum concentration of 950 µg/L (W-830-2214, April). Monitor well W-830-2311, which is located near Spring 3, was installed in 2007 to evaluate the downgradient extent of VOCs in the $Tnsc_{1a}$ HSU. This well was not sampled during the first semester 2011 due to an inoperable pump. A new $Tnsc_{1a}$ guard well, W-830-2610, was completed in June 2010. This well will be added to the sampling plan after final well development and baseline sampling are completed.

Since remediation began in the Upper $Tnbs_1$ HSU, total VOC concentrations in ground water have decreased from a historic maximum of 100 µg/L (W-830-28, June 1998) to a first semester 2011 maximum concentration of 25 µg/L (W-830-2215, April). During the first semester 2011, total VOCs were not detected above the 0.5 µg/L reporting limit, in guard wells W-830-15 and W-832-2112. Both wells are screened in the Upper $Tnbs_1$ HSU.

***2.7.3.2.2. HE Compound Concentrations and Distribution***

During the first semester 2011, HE compounds (RDX, HMX, 2-amino-4, 6-dinitrotoluene, and nitrobenzene) were not detected in ground water in any Building 832 Canyon OU wells.

***2.7.3.2.3. Perchlorate Concentrations and Distribution***

Perchlorate concentrations detected in Qal/WBR HSU ground water have decreased from a historic maximum of 51 µg/L (W-830-34, December 1998) to a first semester 2011 maximum concentration of 14 µg/L (W-832-18, March). The maximum perchlorate concentration measured in ground water from W-832-23 during the first semester 2011 was 9.6 µg/L (March). Monitor well W-832-23, located slightly downgradient of the Building 832 source area, is used to monitor contaminant concentrations in both the Qal/WBR and $Tnsc_{1b}$ HSUs because the well is screened across both units. During the first semester 2011, perchlorate was not detected above the 4 µg/L reporting limit in guard wells W-35B-01 and W-880-02. These guard wells are both screened in the Qal/WBR HSU.

The maximum perchlorate concentration sampled in the $Tnsc_{1b}$ HSU ground water during the first semester 2011 was 17 µg/L (W-832-18, March). Historically, well W-830-58 has contained the highest perchlorate ground water concentration in this HSU (26 µg/L, May 2001). In February 2011, the perchlorate concentration in ground water at monitor well W-830-58 was 8.6 µg/L. During the first semester 2011, perchlorate was not detected above the reporting limit in guard wells W-830-1730, W-4C or W-880-03. These guard wells are all screened in the $Tnsc_{1b}$ HSU.

During the first semester 2011, the maximum perchlorate ground water concentration sampled in the $Tnsc_{1a}$ HSU was 8.1 µg/L in extraction well W-832-25 (February). The highest historic perchlorate concentration sampled in the $Tnsc_{1a}$ HSU was 13 µg/L (W-832-25, February 1999).

During the first semester 2011, perchlorate was not detected above the reporting limit of 4 µg/L in any ground water samples collected from the Upper $Tnbs_1$ HSU.

#### *2.7.3.2.4. Nitrate Concentrations and Distribution*

Nitrate ground water concentrations continue to remain high in the vicinity of the Building 832 and 830 source areas and low or below the reporting limit (<0.5 mg/L) in the downgradient, deeper parts of all Building 832 Canyon HSUs.

During the first semester 2011, nitrate ground water concentrations detected in samples from the Qal/WBR HSU ranged from <0.5 mg/L reporting limit (guard wells) near the site boundary to 120 mg/L (W-832-13, March) in the Building 832 source area.

The maximum nitrate concentrations detected in samples of $Tnsc_{1b}$ HSU ground water during the first semester 2011 was 160 mg/L in dual extraction well W-830-49 (February). Historically, well W-830-49 has contained the highest nitrate concentrations in the $Tnsc_{1b}$ HSU (501 mg/L, June 1998). Nitrate concentrations in the $Tnsc_{1b}$ guard wells ranged from <0.5 mg/L to 1.9 mg/L (W-830-1730, March), significantly below the 45 mg/L cleanup standard.

During the first semester 2011, the maximum nitrate ground water concentration detected in samples from the $Tnsc_{1a}$ HSU was 92 mg/L (W-832-25, March). Nitrate ground water concentrations detected in samples from the Upper $Tnbs_1$ ranged from <0.5 mg/L to 28 mg/L (W-26R-01, January). Nitrate ground water concentrations were not detected above the 45 mg/L cleanup standard in any Upper $Tnbs_1$ HSU guard wells during the first semester 2011. The very low nitrate concentrations in the downgradient areas and the absence of detectable nitrate in the southern site boundary guard wells are consistent with the interpretation that nitrate is naturally attenuating *in situ*.

### *2.7.3.3. Building 832 Canyon OU Remediation Optimization Evaluation*

Ground water and soil vapor extraction wellfield operation continued during the first semester 2011 to prevent offsite plume migration, reduce source area concentrations, and remove contaminant mass. The expanded 832-SRC and 830-SRC extraction wellfields have increased hydraulic capture, while preventing the downward migration of contaminants into deeper HSUs and/or laterally toward the site boundary and Site 300 water supply wells, Well 18 and Well 20. Ground water yield from many 830-SRC and 832-SRC extraction wells continues to be low and hydraulic capture is difficult to assess because these wells cannot maintain continuous operation. The low yield is due to a combination of low hydraulic conductivity geologic materials, dewatering, and limited recharge.

As documented in Section 2.7.1.2, the 832-SRC GWTS and SVTS were offline during early 2011 to replace a knockout drum and because of damage caused by freezing temperatures. Long-term mass removal rates will not be impacted by this shutdown and both facilities were back online by April 2011. At the 830-SRC, a modification was made in early 2010 to allow Upper $Tnbs_1$ HSU extraction wells that do not contain perchlorate concentrations above 4 µg/L (W-830-60, W-830-2215, and W-830-57 wells) to bypass the ion-exchange treatment system. This modification will reduce back pressure and allow the extraction well pumps to operate more effectively, thereby increasing flow, mass removal rates, and hydraulic capture.

In the Qal/WBR and $Tnsc_{1b}$ HSUs, the extraction wellfield targets the highest total VOC plume concentrations emanating from the Building 832 and Building 830 source areas, but steep terrain and unstable canyon bottom soil conditions limit the availability of sites for new wells. Ground water extraction is further constrained by limited recharge and declining water levels in both source areas. At the 830-SRC, some $Tnsc_{1b}$ HSU extraction wells were offline for part of the reporting period due to treatment facility improvements, pump repairs, and freeze protection. No long-term impact is expected as a result of these shutdowns. At both the 832-SRC and 830-SRC areas, the dual extraction wells are an important source of mass removal.

The $Tnsc_{1a}$ extraction wellfield currently consists of two wells: W-830-2214, located near the 830-SRC and W-832-25, located downgradient of 832-SRC in the distal area of this plume. Active remediation of the $Tnsc_{1a}$ HSU began in 2007 and during the time this HSU has been under remediation, total VOC ground water concentrations have remained relatively stable. Water levels continue to decline in both the 830-SRC and 832-SRC areas, limiting continuous extraction from the $Tnsc_{1b}$ and $Tnsc_{1a}$ HSUs. During the first semester 2011, one new guard well, W-830-2610, was installed in the $Tnsc_{1a}$ HSU. This well will be added to the sampling and analysis plan after final well development and baseline sampling are completed.

During the first semester 2011, a new $Tnsc_{1a}$ extraction well (W-830-2701) was installed near Upper $Tnbs_1$ HSU extraction well W-830-60. The purpose of this well is to increase hydraulic capture in the $Tnsc_{1a}$ HSU downgradient of extraction well W-830-2214. This well will also be added to the sampling and analysis plan after final well development and baseline sampling are completed. In 2012, it will be connected to the 830-SRC treatment facility.

Extraction wells in the Upper $Tnbs_1$ target areas with the highest total VOC concentrations. Since remediation began in this HSU, the overall extent of total VOCs have also decreased significantly and ground water samples collected from monitor well W-830-1832, which is located on the leading edge of the VOC plume, have been below the reporting limit for one year. Ground water in Upper $Tnbs_1$ guard wells, which are located downgradient of W-830-1832 and upgradient of water supply Well 20, continues to show analytical results below the 45 mg/L cleanup standard for nitrate and below the reporting limits for all other COCs.

As described in Section 2.4 (High Explosive Process Area), extraction well W-830-2216 extracts ground water from the $Tnbs_2$ HSU. Most of the contamination in this HSU is probably due to sources located in the HEPA; however sources in the Building 832 Canyon OU may also contribute to VOC contamination in the vicinity of W-830-2216. Since extraction began in 2007, total VOC concentrations in extraction well W-830-2216 and nearby monitor well W-830-13 have decreased significantly. The extracted water is treated at the 830-DISS treatment facility.

As extraction proceeds from the 832-SRC, 830-SRC and 830-DISS extraction wells, it is expected that concentrations in all identified Building 832 Canyon HSUs will continue to decline. Over the past year, the extent of the VOC plume in the Upper $Tnbs_1$ HSU has decreased slightly and this trend is expected to persist with continued pumping. Total VOC concentration trends in the Upper $Tnbs_1$ HSU continue to be monitored closely because pumping at water supply Well 20 and backup water supply Well 18 has the potential to influence the distribution of contaminants.

#### *2.7.3.4. Building 832 Canyon OU Remedy Performance Issues*

No new issues were identified during this reporting period that could impact the long-term performance of the cleanup remedy for the Building 832 Canyon OU. The remedy continues to make progress toward cleanup and to be protective of human health and of the environment.

## 2.8. Site 300 Site-Wide OU 8

The Site 300 Site-Wide OU is comprised of release sites at which no significant ground water contamination and no unacceptable risk to human health or the environment are present. For this reason, a monitoring-only interim remedy was selected for the release sites in the Site-Wide Record of Decision (U.S. DOE, 2008). The monitoring conducted during the reporting period for these release sites is discussed below.

### 2.8.1. Building 801 and Pit 8 Landfill

The Building 801 Firing Table was used for explosives testing until it was discontinued in 1998, and the firing table gravel and some underlying soil were removed. Waste fluid discharges to the Building 801 Dry Well from the late 1950s to 1984, resulted in contamination of the soil and ground water. Debris from the firing table was buried in the nearby Pit 8 Landfill until 1974. A map of the Building 801 and Pit 8 Landfill area showing the locations of the building, landfill, and monitor wells is presented on Figure 2.8-1.

#### *2.8.1.1. Building 801 and Pit 8 Landfill Ground Water Monitoring*

Wells K8-01 and K8-03B monitor Building 801 ground water contaminants while wells K8-02B, K8-04, and K8-05 are detection monitor wells for the Pit 8 Landfill. Detection monitoring of this landfill, which is discussed in Section 3.2, is conducted to determine if releases have occurred.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-1. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were performed because there was insufficient water in the wells to collect the samples.

#### *2.8.1.2. Building 801 and Pit 8 Landfill Contaminant Concentrations and Distribution*

At Building 801, the VOCs chloroform, 1,2-DCA, and TCE are the primary COCs detected in ground water; perchlorate and nitrate are the secondary COCs. There are no COCs in ground water at the Pit 8 Landfill. The results of the detection monitoring of the Pit 8 Landfill are discussed in Section 3.2.

During the first semester 2011, the maximum total VOC concentration detected in ground water samples from wells in the Building 801/Pit 8 Landfill area was 5.6 µg/L (K8-01, May). This total VOC concentration was comprised of 3.8 µg/L of TCE and 1.8 µg/L of 1,2-DCA. 1,2-DCA was the only VOC detected above its 0.5 µg/L cleanup standard during the first semester 2011. However, the semester maximum concentration of 1.8 µg/L 1,2-DCA detected in well K8-01 ground water represents a decrease from the historic maximum 1,2-DCA concentration of 5 µg/L detected in a sample from the same well in 1990. Chloroform was not detected in any wells above the 0.5 µg/L reporting limit. Total VOC concentrations detected in ground water samples collected from wells downgradient of Building 801 have decreased from a historic maximum of 10 µg/L (K8-01, 1990).

During the first semester 2011, perchlorate was not detected above the 4 µg/L reporting limit in any ground water samples from Building 801/Pit 8 monitor wells.

Nitrate concentrations in ground water in the vicinity of Building 801/Pit 8 Landfill have been relatively stable over time. During the first semester, the maximum nitrate concentration detected in a ground water sample from a well in the Building 801/Pit 8 Landfill area was 57 mg/L (K8-04, May). The sample from well K8-04 and the duplicate sample from well K8-01 (47 mg/L, May) were the only samples that exceeded the 45 mg/L cleanup standard for nitrate. The historic maximum nitrate concentration of 64 mg/L was detected in samples collected from well K8-01 in 2002. Overall, nitrate concentrations in ground water at the Building 801/Pit 8 Landfill generally are similar to previous semesters.

### 2.8.2. Building 833

TCE was used as a heat-exchange fluid at Building 833 from 1959 to 1982 and was released through spills and rinse water disposal, resulting in TCE-contamination of soil and shallow perched ground water. A map showing the locations of the building and monitor wells is presented on Figure 2.8-2.

#### *2.8.2.1. Building 833 Ground Water Monitoring*

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-2. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; ten required analyses were not performed because there was insufficient water in the wells to collect the samples.

#### *2.8.2.2. Building 833 Contaminant Concentrations and Distribution*

At Building 833, The VOCs TCE and cis-1,2-DCE are the primary COCs in ground water; there are no secondary COCs.

The Tpsg HSU is a shallow, highly ephemeral perched water-bearing zone. During heavy rainfall events, this HSU may become saturated, but quarterly monitoring of the wells from 1993 to present has shown little evidence of saturation. When saturated, monitoring conducted from 1993 to present has shown a decline in total VOC concentrations in Tpsg HSU ground water from a historic maximum concentration of 2,100 µg/L in 1992 (W-833-03). During the first semester 2011, well W-833-33, screened in the Tpsg HSU, yielded a sample containing a total VOC concentration of 150 µg/L (February) that was comprised entirely of TCE. Last year, this well yielded a sample containing a total VOC concentration of 110 µg/L (February) that also consisted entirely of TCE. During the first semester 2011, VOCs were not detected in ground water samples collected from deep $Tnbs_1$ HSU monitor well W-833-30, indicating that VOC contamination continues to be confined to the shallow Tpsg perched water-bearing zone.

### 2.8.3. Building 845 Firing Table and Pit 9 Landfill

The Building 845 Firing Table was used from 1958 until 1963 to conduct explosives experiments. Leaching from Building 845 Firing Table debris resulted in minor contamination of subsurface soil with depleted uranium and HMX detected in samples collected from boreholes drilled in 1989. A map showing the locations of the building, landfill, monitoring wells, ground water elevations, and approximate hydraulic gradient direction in the $Tnsc_0$ HSU are presented on Figure 2.8-3.

#### *2.8.3.1. Building 845 and Pit 9 Landfill Ground Water Monitoring*

Wells K9-01 through K9-04 are detection monitor wells for the Building 845 and Pit 9 Landfill. Detection monitoring of this landfill, which is discussed in Section 3.3, is conducted to determine if releases have occurred.

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-3. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were not performed due to an inoperable pump.

#### *2.8.3.2. Building 845 and Pit 9 Landfill Contaminant Concentrations and Distribution*

The monitor wells near the Pit 9 Landfill are screened in the lower Neroly Formation $Tnsc_0$ HSU. Detection monitoring of the Pit 9 landfill (discussed in Section 3.3) is conducted to identify releases to ground water. There are no ground water COCs at the Building 845 and the Pit 9 Landfill. The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during 2010 were either below reporting limits or within the range of background concentrations. Because uranium and the HE compound HMX were identified as COCs in surface soil at Building 845/Pit 9 Landfill, ground water in this area is monitored for these constituents. HMX concentrations in ground water samples remain below the 1 μg/L reporting limit. Uranium activities in ground water samples remain very low (<1 pCi/L) and $^{235}U/^{238}U$ atom ratios indicate the presence of only natural uranium.

#### 2.8.4. Building 851 Firing Table

The Building 851 Firing Table has been used since 1962 to conduct explosives experiments. A map depicting the locations of the firing table and monitor wells is presented on Figure 2.8-4.

##### *2.8.4.1. Building 851 Ground Water Monitoring*

The sampling and analysis plan for ground water monitoring is presented in Table 2.8-4. This table delineates any additions made to the CMP.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements.

##### *2.8.4.2. Building 851 Contaminant Concentrations and Distribution*

At the Building 851 Firing Table, uranium is the primary and only COC detected in ground water; the VOCs TCE and cis-1,2-DCE are a vadose zone COC.

The first semester 2011 maximum total uranium activity detected in ground water samples from wells in the Building 851 area was 0.479 pCi/L (W-851-08, May). The historic maximum uranium activity was 3.2 pCi/L (W-851-07, October 1991). The atom ratio of $^{235}U/^{238}U$ in samples from wells W-851-06, and W-851-08 indicated the addition of some depleted uranium. The samples from wells W-851-05 and W-851-07 contained only natural uranium. Overall, uranium activities in ground water are similar to previous years and remain well below the 20 pCi/L cleanup standard and within the range of natural background levels.

# 3. Detection Monitoring, Inspection, and Maintenance Program for the Pits 2, 3, 4, 5, 7, 8, and 9 Landfills and Inspection and Maintenance Program for the Drainage Diversion System and Building 850 CAMU

The Detection Monitoring Program is designed to detect any future releases of contaminants from these landfills. This section presents the results for the Pit 2, 3, 4, 5, 7, 8, and 9 Landfills ground water detection monitoring network, and any landfill inspections or maintenance conducted during the reporting period. This section also includes any inspection and maintenance activities conducted for the Pit 7 Drainage Diversion System and Building 850 CAMU during the reporting period.

## 3.1. Pit 2 Landfill

The Pit 2 Landfill was used from 1956 until 1960 to dispose of firing table debris from Buildings 801 and 802. Ground water data indicate that a discharge of potable water to support a red-legged frog habitat located upgradient from the landfill may have leached depleted uranium from the buried waste. The frogs were relocated and the water discharge was discontinued, thereby removing the leaching mechanism. No contaminants were identified in surface or subsurface soil at the Pit 2 Landfill. No risk to human or ecological receptors has been identified at the Pit 2 Landfill.

### 3.1.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride.

The sampling and analysis plan for the Pit 2 Landfill ground water Detection Monitoring Program is presented in Table 3.1-1.

During the reporting period ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; eight required analyses were not performed because there was insufficient water in the wells to collect the samples and nine required analyses were not performed due to unsafe conditions at the well. There were no modifications made to the plan.

### 3.1.2. Contaminant Detection Monitoring Results

A map showing the locations of monitor wells and the Pit 2 Landfill is presented on Figure 2.5-1.

Depth to ground water within the $Tnbs_1/Tnbs_0$ HSU is currently over 50 ft to over 70 ft beneath the Pit 2 Landfill.

The maximum first semester 2011 tritium activity within the $Tnbs_1/Tnbs_0$ HSU in the area immediately south of the Pit 2 Landfill was 4,430 ± 885 pCi/L (NC2-08, May). The historic maximum tritium activity of 49,100 pCi/L was detected in 1986 (January and August) from well K2-01C. These data indicate that tritium activities in $Tnbs_1/Tnbs_0$ HSU ground water immediately downgradient of the landfill are decreasing and are currently a fraction of the historic maximum. The May 2011 ground water samples from wells W-PIT2-2301 and W-PIT2-2302, screened in the Qal/WBR HSU and located in Elk Ravine downgradient from Pit 2 Landfill, did not contain tritium above the reporting limit/background activity (100 pCi/L).

The maximum first semester 2011 uranium activity detected in a ground water sample from the Pit 2 area was 4.1 pCi/L (NC2-08, May). This well is completed in the $Tnbs_1/Tnbs_0$ HSU. Uranium isotope data from ground water samples collected from Qal/WBR wells W-PIT2-2301 and W-PIT2-2302 in March 2010 contained low activities of total uranium (0.98 and 0.17 pCi/L, respectively).

The release of depleted uranium from Pit 2 may have been the result of the discharge of potable water that was used to maintain a wetland habitat for red-legged frogs (a Federally-listed endangered species) within a drainage channel that extends along the northern and eastern margin of the Pit 2 Landfill. This discharge was discontinued in 2005. Since the discharge was discontinued, total uranium activities in ground water from $Tnbs_1/Tnbs_0$ HSU wells W-PIT2-1934 and W-PIT2-1935, both located along the northern margin of the Pit 2 Landfill, have decreased. The samples collected from wells W-PIT2-1934 and W-PIT2-1935 during the first semester 2011 and analyzed by mass spectrometry contained only natural uranium at 4.5 and 1.8 pCi/L, respectively (May). Samples collected from these wells and analyzed by alpha spectrometry contained 4.6 and 1.7 pCi/L of uranium, respectively.

During the first semester 2011, perchlorate was not detected above the 4 µg/L reporting limit in any Pit 2 area ground water samples.

The other detection monitoring constituents: VOCs, nitrate, HE compounds, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during the first semester were either below reporting limits or within the range of background concentrations.

### 3.1.3. Landfill Inspection Results

The Pit 2 Landfill was inspected during first semester 2011. No problems were identified.

### 3.1.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during the second semester 2011.

### 3.1.5. Maintenance

No maintenance was conducted on Pit 2 during the first semester 2011.

## 3.2. Pit 8 Landfill

Pit 8 Landfill received debris from the Building 801 Firing Table until 1974, when it was covered with compacted soil. There is no evidence of contaminant releases from the landfill.

### 3.2.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride.

The sampling and analysis plan for the Pit 8 Landfill ground water Detection Monitoring Program is presented in Table 2.8-1.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were not performed because there was insufficient water in the wells to collect the samples.

### 3.2.2. Contaminant Detection Monitoring Results

Locations of buildings and monitor wells, ground water elevations, and nitrate, perchlorate, and total VOC concentrations in $Tnbs_1/Tnbs_0$ HSU ground water at Pit 8 are presented on Figure 2.8-1.

Historic and current data indicate that VOCs detected in ground water in the Pit 8 Landfill area are the result of releases from the former Building 801 dry well, which have migrated downgradient from Building 801 to the area beneath the landfill. The highest concentration (5.4 µg/L) of total VOCs, comprised of 3.6 µg/L of TCE and 1.8 µg/L of 1,2-DCA, in the first semester 2011 continues to be observed at well K8-01 that is located upgradient of Pit 8. The presence of VOCs (1.3 µg/L of TCE and 0.7 µg/L of 1,2-DCA) in ground water samples from well K8-04, immediately downgradient of the Pit 8 Landfill (2 µg/L, May) appears to be indicative of a continuation of the VOC plume originating at the Building 801 dry well and not due to a release from the Pit 8 Landfill.

The maximum first semester 2011 nitrate concentration detected in a ground water sample from a well in the Pit 8 Landfill area was 57 mg/L (K8-04, May). A duplicate sample from well K8-01 (47 mg/L, May) was the only other sample from the Pit 8 area that exceeded the 45 mg/L cleanup standard for nitrate.

Tritium activities in all samples collected from wells in the Pit 8 Landfill area during first semester 2011 were below the reporting limit (<100 pCi/L), except for the regular and duplicate June 2011 samples from well K8-01 (144 ± 60.0 and 104 ± 75.3 pCi/L, respectively). These activities are all within the range of background.

The other detection monitoring constituents: perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during the first semester 2011 from wells upgradient and downgradient of the Pit 8 Landfill were either below reporting limits or within the range of background concentrations.

Of the constituents monitored during the first semester 2011 as part of the Detection Monitoring Program in $Tnbs_1/Tnbs_0$ HSU ground water from Pit 8 Landfill area wells, only 1,2-DCA and nitrate exceeded applicable cleanup standards.

#### 3.2.3. Landfill Inspection Results

The Pit 8 Landfill was inspected during the first semester 2011. No problems were reported.

#### 3.2.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during the second semester 2011.

#### 3.2.5. Maintenance

No maintenance was conducted at Pit 8 during the first semester 2011.

### 3.3. Pit 9 Landfill

Debris generated at the Building 845 Firing Table was buried in the Pit 9 Landfill from 1958 until 1963. There has been no evidence of contaminant releases from the Pit 9 Landfill.

#### 3.3.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride.

The sampling and analysis plan for the Pit 9 Landfill ground water Detection Monitoring Program is presented in Table 2.8-3.

During the reporting period, ground water monitoring was conducted in accordance with the CMP monitoring requirements with the following exceptions; nine required analyses were not performed due to an inoperable pump.

#### 3.3.2. Contaminant Detection Monitoring Results

A map showing the locations of the building, landfill, and monitoring wells are presented on Figure 2.8-3.

The detection monitoring constituents: VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, and fluoride concentrations/activities in samples collected during the first semester 2011 were either below reporting limits or within the range of background concentrations.

#### 3.3.3. Landfill Inspection Results

The Pit 9 Landfill was inspected during the first semester 2011. No problems were observed.

#### 3.3.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring will be conducted during the second semester 2011.

#### 3.3.5. Maintenance

No maintenance was performed during the first semester 2011.

### 3.4. Pit 7 Complex Landfills

The Pit 3, 4, 5, and 7 Landfills are collectively designated the Pit 7 Landfill Complex. Firing table debris containing tritium, depleted uranium, and metals was placed in the pits in the 1950s through the 1980s. The Pit 4 and 7 landfills, and about 25-30% of Pit 3, were capped in 1992. During years of above-normal rainfall (i.e., 1997-1998 El Niño), ground water rose into the bottom of the landfills and the underlying contaminated bedrock. This resulted in the release of tritium, uranium, VOCs, perchlorate, and nitrate to ground water. In addition to these COCs, ground water samples from Pit 7

Complex detection monitor wells are also analyzed for metals, HE compounds, and PCBs as these constituents may have been contained in the firing table gravels placed in the landfills.

### 3.4.1. Sampling and Analysis Plan Modifications

Detection monitoring is conducted annually for VOCs, nitrate, tritium, perchlorate, HE compounds, uranium isotopes, Title 26 metals, lithium, fluoride, and PCBs.

The sampling and analysis plan for the Pit 7 Complex Landfill ground water Detection Monitoring Program is presented in Table 2.5-8.

During the reporting period ground water monitoring was conducted in accordance with the CMP monitoring requirements.

### 3.4.2. Contaminant Detection Monitoring Results

A map showing the locations of detection monitor wells and the Pit 7 Complex Landfill is presented on Figure 2.5-1. Wells K7-01, K7-03, K7-06, K7-09, K7-10, NC7-26, NC7-47, and NC7-48 comprise the current detection monitoring well network for the Pit 7 Complex. Wells K7-01, K7-03 and NC7-26 are located downgradient of Pit 5 and Pit 7; well K7-06 is upgradient of Pit 7, wells K7-09 and K7-10 are cross-gradient of Pits 3, 5, and 7; well NC7-48 is immediately downgradient of Pit 7, and well NC7-47 is far downgradient of Pits 3 and 7.

The detection monitor wells are screened in the following HSUs:

- NC7-48: Qal/WBR HSU.
- K7-01 and K7-06: Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs.
- K7-03, K7-10, NC7-26, and NC7-47: $Tnbs_1/Tnbs_0$ HSU.
- K7-09: $Tnsc_0$ HSU.

Ground water extraction and treatment at the PIT7-Source facility began in March 2010. Pumping on the extraction wells (all completed in the Qal/WBR HSU) proximal to Pits 3 and 5 will have an impact on the distribution and magnitudes of COC concentrations observed.

Depth to ground water is currently a minimum of 10-15 ft below the buried waste in Landfill Pits 3, 4, 5, and 7.

#### *3.4.2.1. Tritium*

The Pit 3 and 5 Landfills have been identified as the sources of previous releases of tritium to ground water. The Pit 7 Landfill is not an apparent source of tritium in ground water as most of the tritium-bearing experiments conducted at Site 300 occurred prior to its opening in 1979 (Taffet et al., 2008).

The highest tritium activity detected in a first semester 2011 ground water sample from a Pit 7 Complex detection monitor well was 71,000 pCi/L (April) in $Tnbs_0$ well K7-03. Tritium activities in samples from this well have generally been declining from the historic maximum activity detected in a water sample from this well of 216,000 pCi/L in March 1993. Last year, the maximum tritium activity in a sample from this well was 82,000 pCi/L.

Tritium activities in samples from detection monitor well K7-01 have decreased from the historic maximum activity of 72,900 pCi/L in October 1999 to a first semester 2011 activity of 38,600 pCi/L detected in the May sample from this well. Last year, a maximum tritium activity of 47,200 pCi/L was detected in the April 2010 sample from this well.

Tritium activities in samples from detection monitor well NC7-26 have decreased from the historic maximum activity of 30,000 pCi/L to a current activity of 1,800 pCi/L in the April sample. Last year, the maximum tritium activity in a sample from this well was 2,600 pCi/L.

Tritium activities in all samples collected this semester from upgradient well K7-06, cross-gradient wells K7-09, and K7-10, downgradient well NC7-48, and far downgradient well NC7-47 were all below the 100 pCi/L reporting limit/background activity.

In general, tritium activities and the extent of tritium in the $Tnbs_1/Tnbs_0$ and Qal/WBR HSUs in the Pit 7 Complex area are consistent with those observed in 2010 and no new release of tritium from the landfills is indicated by the first semester 2011 ground water tritium data.

A discussion of tritium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.1.

### *3.4.2.2. Uranium*

Depleted uranium was previously released to ground water from sources in Pits 3, 5, and 7 (Taffet et al., 2008).

Uranium activities were below the 20 pCi/L cleanup standard in all detection monitor well samples collected during the first semester 2011. The maximum uranium activity in a first semester sample from a detection monitor well was 15.5 pCi/L (May) from well K7-01. Uranium activities in ground water samples from this well have generally fluctuated within a few pCi/L of the 20 pCi/L cleanup standard since the 1997-98 El Niño and $^{235}U/^{238}U$ isotopic ratios have indicated added depleted uranium. The maximum uranium activity detected in a sample from this well was 27 pCi/L (September 1984). The maximum tritium activity detected in a sample from this well in 2010 was 19.2 pCi/L.

The next highest uranium activity in a first semester detection monitor well sample was 9.04 pCi/L in the April 2011 sample from well NC7-48. Uranium activities in samples from this well have declined from the historic maximum of 104.9 pCi/L detected in this well after the 1997-98 El Niño (March 1998). The maximum uranium activity detected in a sample from this well in 2010 was 13.3 pCi/L. Ground water samples from this well have historically contained depleted uranium.

Uranium activities in samples from all detection monitor wells have generally decreased from their historic maximum uranium activities. Uranium activities in samples from wells K7-06, K7-09, K7-10, NC7-26, and NC7-47 have generally decreased to near or below the detection limit during the first semester 2011.

The extent of uranium in Qal/WBR and $Tnbs_1/Tnbs_0$ ground water is similar to recent years. Ground water uranium data from the first semester 2011 do not indicate any new releases of uranium from the Pit 7 Complex Landfills.

A discussion of uranium that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.2.

### *3.4.2.3. Nitrate*

The maximum nitrate concentration detected in a first semester 2011 sample from a Pit 7 Complex detection monitor well was 65 mg/L (May 2011) from $Tnbs_1/Tnbs_0$ HSU well NC7-47.

Ground water samples from well NC7-47 have never contained any other COCs in excess of background concentrations. None of the other detection monitoring wells yielded first semester 2011 samples containing nitrate concentrations in excess of the 45 mg/L cleanup standard. Nitrate concentrations in samples from the other detection monitor wells ranged from <0.5 mg/L at wells K7-09 and NC7-26 to 40 mg/L at well K7-01. Nitrate concentrations trends in the detection monitoring wells are all stable, and generally decreasing from their historic maximum nitrate concentrations. The distribution of nitrate in Pit 7 Complex ground water has declined from previous years. Current data do not indicate any new releases of nitrate from any of the landfills.

A discussion of nitrate that was previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.3.

### *3.4.2.4. Perchlorate*

Wells K7-01 (screened in the Qal/WBR and $Tnbs_1/Tnbs_0$ HSUs) and K7-03 (screened in the $Tnbs_1/Tnbs_0$ HSU) are the only detection monitor wells from which ground water samples have historically contained perchlorate at concentrations in excess of the 4 µg/L detection limit. Perchlorate concentrations in samples from these wells have decreased from the historic maximum of 25 µg/L at K7-01 (July 2006) and 29 µg/L at K7-03 (April 2005) to 11 µg/L and 5.6 µg/L of perchlorate, respectively, during the first semester 2011. The overall extent of perchlorate in ground water in the Pit 7 Complex area did not change significantly from 2010 to present. The current semester data do not indicate any new releases of perchlorate from any of the landfills.

A discussion of perchlorate that was previously released to ground water from the Pit 7 Complex landfills is presented in Section 2.5.5.2.4.

### *3.4.2.5. Volatile Organic Compounds*

During the first semester 2011, VOCs were detected in samples from only two detection monitor wells at concentrations above the 0.5 µg/L detection limits. These samples from wells K7-01 and K7-03 contained 1.2 and 0.91 µg/L of total VOCs (all as TCE), respectively. The historic maximum total VOC concentrations in samples from these wells were 20 µg/L (K7-01, May 1985) and 15.2 µg/L (K7-03, July 1985). VOC concentrations have generally been declining in samples from these wells since the times of those maxima. The overall extent of VOCs in ground water in the Pit 7 Complex area did not change significantly from 2010 to the first semester 2011. The current data do not indicate any new releases of VOCs from any of the landfills.

A discussion of VOCs that were previously released to ground water from the Pit 7 Complex Landfills is presented in Section 2.5.5.2.5.

### *3.4.2.6. Title 26 Metals and Lithium*

During the first semester 2011, Title 26 metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc) and lithium were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of background concentrations or cleanup standards. These data did not indicate a release of metals during this semester from any of the landfills.

### *3.4.2.7. High Explosives (HE) Compounds*

During the first semester 2011, HE compounds were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of individual compound detection limits of 1-2 µg/L. These data did not indicate a release of HE compounds during the semester from any of the landfills.

### *3.4.2.8. Polychlorinated Biphenyls (PCBs)*

During the first semester 2011, PCBs were not detected in ground water samples from the Pit 7 Complex area detection monitoring wells at concentrations in excess of individual compound detection limits of approximately 0.5 µg/L. These data do not indicate a release of PCBs during the semester from any of the landfills.

### 3.4.3. Landfill Inspection Results

The Pit 7 landfill cap engineering inspection was conducted on April 26, 2011. Some very small burrows (maximum diameter of 2-in to 4-in) were observed but were deemed to not require repair at this time. No other issues were observed. The Pit 3 and 5 Landfill covers were not inspected during the first semester 2011.

### 3.4.4. Annual Subsidence Monitoring Results

Annual subsidence monitoring of the Pit 7 landfill will be conducted during the second semester 2011.

### 3.4.5. Maintenance

Maintenance was not performed on any of the pit covers during the first semester 2011.

## 3.5. Pit 7 Complex Drainage Diversion System

A Drainage Diversion System was constructed in the Pit 7 Complex area of OU 5 in 2007-2008 (Section 2.6). The Pit 7 Drainage Diversion System is inspected and maintained per the requirements of the Inspection and Maintenance Plan (Taffet et al., 2008).

### 3.5.1. Drainage Diversion System Inspection Results

Monthly rainy season inspections occurred during the first semester 2011. The drainage diversion system was inspected on January 13, February 14, March 14, March 30 (following large storm), and April 13 (post-season). Sediment and vegetative debris accumulation were noted. In addition, squirrel October damage to the channel banks was also observed.

### 3.5.2. Drainage Diversion System Maintenance

Vegetative debris and sediment buildup were removed during the first semester 2011. In addition, squirrel damage to the channel banks was repaired.

## 3.6. Building 850 CAMU

A CAMU was constructed in the Building 850 area of OU 5 in 2009 as part of the Building 850 Removal Action (Section 2.5). The Building 850 CAMU is inspected and maintained per the requirements of the Inspection and Maintenance Plan (SCS Engineers, 2010).

### 3.6.1. Building 850 CAMU Inspection Results

The semi-annual CAMU inspection will occur during the beginning of the second semester 2011.

### 3.6.2. Building 850 CAMU Maintenance

No maintenance was required.

# 4. Risk and Hazard Management Program

The goal of the Site 300 Risk and Hazard Management Program is to protect human health and the environment by controlling exposure to contaminants during remediation. Risk and hazard management is conducted in areas of Site 300 where the exposure point risk exceeded $1 \times 10^{-6}$ or the hazard index exceeded 1 in the baseline risk assessment. Institutional controls have been implemented to manage risks. The CMP/CP requires that the institution controls in place at Site 300 be evaluated annually. The completed Institutional Controls Monitoring Checklist for 2011 will be included in the Annual CMR.

## 4.1. Human Health Risk and Hazard Management

The CMP/CP requires that the risk and hazard associated with volatile contaminants in the subsurface migrating upward into indoor and outdoor ambient air and being inhaled by workers be re-evaluated annually using current data, where the risk exceeds $10^{-6}$ and the hazard indices exceeds 1.

The on-site worker inhalation risk associated with vapor intrusion from the subsurface into indoor and outdoor air is discussed in Section 4.1.1. The onsite worker inhalation risk associated with springs is discussed in Section 4.1.2.

### 4.1.1 Annual Inhalation Risk Evaluation

The CMP (Ferry et al., 2002) requires that the risk and hazard associated with volatile contaminants in the subsurface migrating upward into indoor and outdoor ambient air and being inhaled by workers be re-evaluated annually using current data. The following risk evaluations were performed during 2010:

- Indoor Ambient Air in Building 834D
- Indoor Ambient Air in Building 830
- Indoor Ambient Air in Building 833

Risk evaluations for these buildings will be performed and reported in the Annual CMR.

Institutional controls, such as restricting access to or activities in areas of elevated risk, remained in place during 2011 to prevent unacceptable exposure to contaminants during remediation for those buildings and areas that continue to show an unacceptable risk and/or hazard.

### 4.1.2. Spring Ambient Air Inhalation Risk Evaluation

#### *4.1.2.1. VOC-Contaminated Springs*

The CMP requires annual sampling of outdoor air above VOC-contaminated surface water, when surface water is present to determine VOC concentrations.

An unacceptable risk or hazard was identified during the baseline risk assessment (Webster-Scholten, 1994) for the inhalation of VOCs at four locations:

1. Spring 3 (Building 832 Canyon OU) – Cumulative risk 7 x $10^{-5}$, hazard index 2.3 due to TCE and PCE.
2. Spring 5 (HEPA OU) – Cumulative risk 1 x $10^{-5}$, due to 1,1-DCE and TCE.
3. Spring 7 (Pit 6 Landfill OU) – Cumulative risk 4 x $10^{-5}$, hazard index 1.5 due to TCE, PCE 1,2-DCA, and chloroform.
4. The Carnegie State Vehicular Recreation Area pond (offsite, east of the Pit 6 Landfill) – Cumulative risk 3 x $10^{-6}$ (hypothetical), due to TCE.

The risk and hazard management evaluation for Spring 3 was completed in 2009. The estimated risk has remained below $10^{-6}$ and the hazard index has remained below 1 for two consecutive years. No unacceptable risk or hazard to onsite workers exists. Therefore, the annual ambient air inhalation risk evaluation was continued for the following springs in 2011:

- Ambient Air Near Spring 5 in the HEPA OU
- Ambient Air Near Spring 7 in the Pit 6 Landfill OU

No surface water or green hydrophilic vegetation was present at Springs 5 and 7 during first semester 2011, therefore no ambient air VOC sampling was performed. Springs 5 and 7 have been devoid of surface water or green hydrophilic vegetation since monitoring began in 2003. These springs will be monitored for the presence of surface water or green hydrophilic vegetation in 2012 and air samples will be collected if water is present.

Water-supply well CARNRW-2 is used to fill the Carnegie State Vehicular Recreation Area pond. The baseline risk assessment indicated that if the VOC source in the Pit 6 Landfill OU was not controlled, contaminated ground water could migrate to well CARNRW-2 and result in an unacceptable risk from inhaling VOC vapors volatilizing from the pond. However, an engineered cap was placed over the Pit 6 Landfill preventing infiltration of precipitation and further releases of contaminants from the landfill. The VOC plume originating from the Pit 6 Landfill has not impacted CARNRW-2. No unacceptable risk or hazard exists.

#### *4.1.2.2. Tritium-Contaminated Springs*

An unacceptable cumulative risk of $1 \times 10^{-3}$ was identified in the baseline risk assessment for the inhalation of tritium at Well 8 Spring in the Building 850 area. The risk associated with the inhalation of tritium vapors volatilizing from Well 8 Spring is based on the maximum tritium activity detected (770,000 pCi/L) in 1972. The tritium activities in Well 8 Spring have steadily declined over the decades. The 2002 CMP/CP did not present risk and hazard management processes to re-evaluate the risk associated with tritium in Well 8 Spring. The 2009 CMP/CP revision indicated that the inhalation risk associated with tritium in surface water volatilizing into outdoor ambient air will be re-evaluated annually when surface water is present. The surface water will be sampled and analyzed for tritium semi-annually. The maximum activity will be compared to the current tritium vapor PRG for tap water.

The results of the 2010 risk re-evaluation of Well 8 Spring indicated that the 2010 maximum activity of tritium in Well 8 Spring surface water samples (16,800 pCi/L) exceeded the August 2010 Inhalation PRG for tap water of 188 pCi/L. Workers do not occupy or plan to occupy the site in the near future, therefore site use restrictions will be maintained and the annual sampling continued until the activity remains below the PRG for two years.

The results of the 2011 risk re-evaluation will be presented in the Annual CMR.

## 4.2. Ecological Risk and Hazard Management

### 4.2.1. Ecological Risk and Hazard Management Measures and Contingency Plan Actions Required by the 2009 Compliance Monitoring Report/Contingency Plan

The ecological risk and hazard management measures described in the 2009 CMP/CP (Dibley et al. 2009) were developed to meet the Remedial Action Objectives for environmental protection. These objectives are to:

1. Ensure ecological receptors important at the individual level of ecological organization (special-status species, i.e., State of California or federally-listed threatened or endangered species or State of California species of special concern) do not reside in areas where relevant hazard indices exceed 1.
2. Ensure changes in contaminant conditions do not threaten wildlife populations and vegetation communities.

The ecological risk and hazard management measures required by the 2009 CMP/CP include: (1) periodically evaluating available biological survey data from the Buildings 801, 851 and the HEPA to determine potential population-level impacts to ground squirrel and deer exposed to cadmium in surface soil in these areas, as well as re-evaluating the ecological hazard associated with cadmium in surface soil in these areas, (2) ensuring the integrity of the Pit 7 Complex landfill caps to prevent exposure to burrowing animals from uranium, and (3) evaluating changes in existing contaminant and ecological conditions in OUs 1 through 8 every five years, including re-evaluating VOCs in burrow air in the event that ground water VOC concentrations increase to levels that previously posed a risk to burrowing animals.

As part of the contingency plan presented in the 2009 CMP/CP, periodic review of available biological survey data (e.g., preconstruction survey data, biological monitoring data, surveys conducted for Environmental Impact Statement/Environmental Impact Report (EIS/EIR) preparation, etc.) for the presence of new special status species is required. Any new special status species identified is to be evaluated for potential impact from the presence of contamination using the process laid out in the 2009 CMP/CP. The results of this evaluation will be reported on in the annual CMRs.

In addition to reporting on the ecological risk and hazard management and contingency plan measures described in the 2009 CMP/CP, this and future compliance monitoring reports will address several new constituents identified in surface soil and surface water during the most recent five year ecological review for which ecological hazard could not be adequately evaluated due to either a limited data set or the lack background data. The results of the most recent Five-Year Ecological Review were reported in the 2008 Annual CMR (Dibley et al. 2009).

This report, and subsequent compliance monitoring reports prepared during the reporting period in which the 2009 CMP/CP is active, will report on ecological risk and hazard management measures and ecological contingency plan actions required by the 2009 CMP/CP.

#### 4.2.2. Cadmium in Surface Soil

As required by the 2009 CMP/CP, available biological survey data were reviewed to identify changes in the abundance of deer or ground squirrel over time that could indicate impacts to the populations in the Buildings 801 and 851 areas, and the HEPA. Available survey data were also reviewed to identify the presence of special status species. The results of the most recent review are reported in the 2010 Annual CMR. Biological survey data will again be reviewed and reported on in the 2011 Annual CMR.

In addition to evaluating the available biological survey data from the Buildings 801, 851 and HE Process Areas, the 2009 CMP/CP also requires a re-evaluation of the ecological hazard associated with cadmium in surface soil in these areas to determine if continuation of risk and hazard management measures are necessary. Part of this re-evaluation includes collecting additional surface soil samples from these areas for cadmium analysis and re-evaluating the associated ecological hazard, as described in the 2009 CMP/CP.

As part of the re-evaluation of the ecological hazard associated with cadmium in surface soil, locations with cadmium exceeding Site 300 background in these areas were examined more closely, which included conducting a site visit to each location. In addition, the ecological relevance of the EPA Ecological Soil Screening Levels (U.S. EPA 2005) to biota expected to occur at Site 300 was also examined. Figures 4.2-1 through 4.2-5 show the locations of surface soil samples with cadmium concentrations in excess of the Site 300 maximum background concentration of 1.9 mg/kg in the vicinity of Building 801 (Figure 4.2-1), 851 (Figure 4.2-2) and HEPA (Figures 4.2-3 through 4.2-5). Table 4.2-1 summarizes the cadmium concentration data from samples collected in these areas. Close inspection of these locations reveal that elevated cadmium is limited to 1) areas near or adjacent to roads or fire trails, or 2) areas adjacent or within a paved area. Figure 4.2-1 shows the location of elevated cadmium adjacent to Building 801 facilities. Cooling tower blow down historically was discharged into this area adjacent to the paved road, although this practice has been discontinued. Figures 4.2-2, 4.2-3 and 4.2-4 each show a single sample containing cadmium in excess of background adjacent to either a paved road or a fire trail. Figure 4.2-5 shows a single sample with cadmium exceeding background in the paved area between Buildings 827A and 827B. This sample was associated with a tank removal project.

Similar to lead, cadmium is often associated with the burning of fossil fuels (U.S. EPA 2005), which may result in elevated cadmium concentrations adjacent to roads. The presence of cadmium adjacent to roads is therefore unlikely to be the result of release due to specific Site 300 activities. The cadmium detected adjacent to Building 827 is not within an area accessible to ecological receptors. The area adjacent to Building 801 may be accessible to ecological receptors, but its small areal extent limits its potential ecological impact.

Since the completion of the baseline ecological risk assessment, the EPA has developed Ecological Soil Screening Levels (EcoSSLs) for cadmium (U.S. EPA 2005). The EcoSSLs went through an extensive peer review process, and are the highest quality screening levels available. In developing these screening levels, available literature was rigorously screened to develop a reasonable, but conservative, toxicity reference value (TRV). In the Site 300 baseline ecological risk assessment, a single paper (Wills et al. 1981) was used to derive the highly conservative TRV of 0.0055 milligram per kilogram per day (mg/kg/d) for mammals. This paper was only one of 145 studies used by the EPA to derive the TRV for the mammals of 0.777 mg/kg/d.

EcoSSLs were developed by the EPA for several groups of ecological receptors. Table 4.2-2 shows the EcoSSLs for terrestrial plants, soil invertebrates, and three guilds of birds and mammals representing herbivores, ground insectivores and carnivores. With the exception of the EcoSSLs for avian and mammalian ground insectivores, all EcoSSLs for cadmium are significantly above Site 300 background as well as the cadmium concentrations of samples shown in Figures 4.2-1 through 4.2-5 (Table 4.2-1). Thus, the ecological hazard identified in the baseline ecological risk assessment to ground squirrels and deer can be assumed not to be present. Site 300 does not have any strict ground insectivorous mammals (such as the shrew), and few strict ground insectivorous birds. This is because the arid nature of the site limits the types of ground-dwelling insects, although aerial insects are abundant. For example, earthworms, which are the assumed food source for the avian and mammalian ground insectivores listed in Table 4.2-1, do not occur at Site 300 except within a small irrigated lawn within the Site 300 administrative area located in the southern portion of the site. The rock wren (*Salpinctes obsoletus*), a ground insectivorous bird, does occur in canyons south of Building 801, but is unlikely to be present in this area due to lack of appropriate habitat (rock outcrops and canyons). This species may occur in the rock outcrops to the east and south of Building 851. However, the limited areal extent of cadmium exceeding background in these areas will limit exposure to the rock wren.

Although there are no strict mammalian ground insectivores and few avian ones, the California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana draytonii*) are both ground insectivores. Although the EPA did not develop ecological soil screening levels for amphibians due to the lack of data, it considers the mammalian and avian ESLs to be protective of amphibians. As discussed in the 2010 Annual CMR, all of the areas in Figures 4.2-1 through 4.2-5 are dispersal habitat for the California red-legged frog (a federally-listed threatened species), although it is unlikely these species will spend any significant time in these areas due to the lack of nearby water. The Building 815 (Figure 4.2-3), Well 18 (Figure 4.2-4) and Building 827 (Figure 4.2-5) areas are also located within the 1100 meter buffer on California tiger salamander breeding sites (a federal threatened species). The breeding sites that are within 1100 meters of these locations are located along the southeastern boundary of Site 300 near Corral Hollow Road. Again, the limited extent of cadmium in these areas will limit the hazard to the California tiger salamander.

Because of the small potential for cadmium to pose an ecological hazard to ground insectivores, only limited soil sampling will be conducted to confirm that elevated cadmium levels are not wide-spread in areas of actual ecological habitat, and that the areal extent of elevated cadmium in the four areas shown in Figures 4.2-1 through 4.2-4 is quite limited. Additional soil sampling will not be conducted in the Building 827 complex (Figure 4.2-5), as the area where the elevated cadmium levels were detected is within a paved area. Two soil samples taken in the vegetated areas near facility C (PC-B827-09 and PC-B827-013) do not show elevated cadmium concentrations.

### 4.2.3. Uranium in Subsurface Soil within the Pit 7 Complex Landfills

As part of the Five-Year Ecological Review reported on in the 2008 Annual CMR, results of samples of pit waste that were collected from borings through the Pit 3 and 5 landfills at depths 4 ft or greater were determined to contain uranium at concentrations that posed a hazard if ingested by ground squirrels, burrowing owls, and kit fox. While this area represents potential habitat for burrowing owls and kit fox, neither species has been observed in this area.

The 2009 CMP/CP requires the Pit 7 Complex landfills to be inspected and any burrows or holes in the cover are filled to prevent unacceptable exposure of animals to the pit waste. This is done as part of the inspection and maintenance program for the Pit 7 Complex. Section 3.4.3 describes the quarterly landfill inspection results, Section 3.4.4 describes the annual subsidence monitoring results, and Section 3.4.5 describes any maintenance performed. Results of the 2010 inspections were reported on in the 2010 Annual CMR. Results of the 2011 inspections will be reported on in the 2011 Annual CMR.

### 4.2.4. Constituents Identified in the 2008 Five Year Ecological Review Requiring Additional Evaluation

As reported in the 2010 First Semester CMR, the ecological hazard of several new constituents detected in surface soil and surface water could not be adequately evaluated in the Five-Year Ecological Review due to either a limited data set or the lack of background data. In surface soil, the ecological hazard from potassium-40 (K-40) was not evaluated due to a limited data set and the lack of background data. To determine if a sampling effort to develop background levels of K-40 in surface soil is warranted, the literature will be reviewed to evaluate the potential for ecological hazard from K-40 in surface soil. Results of this review will be reported in future compliance monitoring reports.

The Five-Year Ecological Review concluded that chloride, ortho-phosphate, total phosphorus, nitrate plus nitrite, ammonia nitrogen and uranium in several springs required additional evaluation to determine their potential to cause ecological hazard. As reported in the 2010 First Semester CMR, additional evaluation showed that many of these constituents were within Site 300 background or the data were misinterpreted in the Five-Year Ecological Review, and thus were dropped from further consideration. Constituents that require additional evaluation include chloride in Spring 14, total phosphorus as P and ammonia in Spring 4, and total uranium in Springs 10 and 11.

Although the maximum chloride concentration detected in Spring 14 exceeds the maximum concentration observed in background springs, the chloride concentration in the most recent sample collected from Spring 14 was below the maximum concentration detected in the background springs. Chloride concentrations will be monitored in future samples collected from Spring 14.

The single sample from Spring 4 analyzed for total phosphorus as P exceeds the maximum concentration observed in the background springs. The maximum concentration of ammonia nitrogen in Spring 4 was detected in the most recent sample available that was analyzed for this constituent. Data for ammonia nitrogen are not available for the background springs. Therefore, future samples collected from Spring 4 will be analyzed for total phosphorus as P and ammonia nitrogen to determine representative concentrations of these constituents in this spring. In addition, future samples collected from the background springs will be analyzed for ammonia nitrogen to determine the background concentration of this constituent.

The maximum total uranium concentration as mg/L (estimated from uranium-238 results) in Spring 10 and Spring 11 slightly exceeded the Site 300 background concentration. These maximum concentrations were detected in the most recent sample available for both springs. Both samples were analyzed for uranium isotopes using mass spectrometry, and results from both springs showed a uranium-235/uranium-238 ratio of 0.0072. This is the natural ratio for these uranium isotopes, and indicates no added depleted uranium is present. Few of the background springs have had samples analyzed for uranium isotopes using the more precise mass spectrometry analytical analysis. The vast majority of available background uranium data are from alpha spectrometry analyses. Therefore, future samples collected from the current background springs will be analyzed for uranium isotopes using mass spectrometry.

Data from the additional spring sampling will be reported on in future compliance monitoring reports as they become available.

### 4.2.5. Identification and Evaluation of New Special Status Species

Contingency actions that are described in the 2009 CMP/CP include periodically evaluating available biological survey data (e.g., pre-construction survey data, biological monitoring data, surveys conducted for EIR/EIS preparation) for the presence of new special-status species and reporting the results of the evaluation in the annual compliance monitoring reports. New biological information collected since the completion of the Five-Year Ecological Review was evaluated and reported on in the 2010 Annual CMR. No new special-status species were identified in areas of potentially elevated ecological risk. New biological information collected during 2011 will be evaluated and reported on in the 2011 Annual CMR.

# 5. Data Management Program

The management of data collected during first semester 2011 was subject to the Environmental Restoration Department (ERD) data management process and standard operating procedures (Goodrich, 2009). This data management process tracks sample and analytical information from the initial sampling plan through data storage in a relational database. As part of the standard operating procedures for data quality, this process includes sample planning, chain of custody tracking, sample collection history, electronic and hard copy analytical results receipt, strict data validation and verification, data quality control procedures, and data retrieval and presentation. The use of this system promotes and provides a consistent data set of known quality. Quality assurance and quality control are performed consistently on all data.

## 5.1. Modifications to Existing Procedures

The relational database used to maintain the data for the CMR continued to be Oracle on Linux servers. General maintenance and refinements were implemented to improve chains of custody, data entry verification, and querying abilities. Improvements continued to be made to the geographic information systems (GIS) tools. Verifications were added to further improve Sample Planning and Chain of Custody Tracking (SPACT). Improvements and additions to the ERD data management process continued to be implemented in an ongoing effort to automate and improve the applications, including updates to verifications. The Treatment Facility Real Time (TFRT) application, a high frequency data acquisition system for treatment facilities and their associated extraction wells, continued to be improved and its scope of coverage extended. Improvements continued to be added to Well Track, a cradle-to-grave tracking system for wells. Standard operating procedures are up to date.

## 5.2. New Procedures

The process of re-architecting existing computer programs that generate web pages continues, with the dual goals of improving maintainability and user efficiency. A new application was developed and implemented in beta version for creation of the Sampling and Analysis Planning tables published in this document. Bid Package Price Management tool was added to SPACT allowing updates of analytical contract pricing.

# 6. Quality Assurance/Quality Control Program

LLNL conducted all compliance monitoring in accordance with the approved Quality Assurance Project Plan (QAPP) (Dibley, 1999) requirements for planning, performing, documenting, and verifying the quality of activities and data. The QAPP was prepared for CERCLA compliance and ensures that the precision, accuracy, completeness, and representativeness of project data are known and are of acceptable quality. The QAPP is used in conjunction with the LLNL ERD Standard Operating Procedures (SOPs), Operations and Maintenance Manuals (O&Ms), Work Plans, Integration Work Sheets (IWSs), and Site Safety Plans. Modifications to existing LLNL quality assurance/quality control (QA/QC) procedures, new QA/QC procedures that were implemented during this reporting period, self-assessments, quality issues and corrective actions, and analytical and field quality control are discussed in this section.

## 6.1. Modifications to Existing Procedures

Approximately thirty ERD SOPs have been updated and are currently going through the final review process. After the final review has been completed and procedures have been signed-off, the approved procedures will be released as Revision 14. Revision 14 consists of the following procedures which will be distributed as controlled documents: 1.1: Field Borehole Logging, SOP 1.2: Borehole Sampling of Unconsolidated Sediments and Rock, SOP 1.3: Drilling, SOP 1.4: Well Installation, SOP 1.5: Initial Well Development, SOP 1.6: Borehole Geophysical Logging, SOP 1.7: Well Closure, SOP 1.10: Soil Vapor Surveys, SOP 1.11: Soil Surface Flux Monitoring of Gaseous Emission, SOP 1.13: Operation of the AMS TR7000 Well Management System, SOP 1.15: Well Site Core Handling, SOP 1.16: Four Wheel All Terrain Vehicle (ATV) Operation, SOP 1.17: Soil Vapor Monitoring and Sampling, SOP 4.1: General instructions for Field Personnel, SOP 4.2: Sample Control and Documentation, SOP 4.4: Guide to Packaging and Shipping of Samples, SOP 4.5: General Equipment Decontamination, SOP 4.6: Validation and Verification of Radiological and Nonradiological Data Generated by Analytical Laboratories, SOP 4.7B: Site 300 Treatment and Disposal of Well Development and Well Purge Fluids, SOP 4.8: Calibration/Verification and Maintenance of Field Instruments Used in Measuring Parameters of Surface Water, Ground Water, and Soils, SOP 4.9: Collection of Field QC Samples, SOP 4.12: Quality Improvement Forms, SOP 4.13: Standard Operating Procedure Process, SOP 4.15: ERD Self-assessments and Walkabouts, SOP 4.16: ERD Lockout/Tagout Program, SOP 4.17: Change of Aqueous and Vapor Phase Granular Activated Carbon, SOP 4.18: ERD Document Control, SOP 5.5: Data Management Receipt and Processing, SOP 5.20: Cost Effective Sampling (CES) Algorithm Preparation, and SOP 6.1: Decontamination and Decommissioning (D&D) Team – SOP 001. Procedures that are continuing in the review and update process and will not be released as part of Revision 14 are as follows: SOP 1.8: Disposal of Investigation-Derived Wastes (Drill Cuttings, Core Samples, and Drilling Mud), SOP 1.14: Final Well Development/Specific Capacity Tests at LLNL Livermore Site and Site 300, SOP 2.8: Installation of Dedicated Sampling Devices, SOP 3.1: Water-Level Measurements, SOP 3.2: Pressure Transducer Field Calibration, SOP 3.3: Hydraulic Testing (Slug/Bail), SOP 3.4: Hydraulic Testing (Pumping), SOP 4.7A: Livermore Site Treatment and Disposal of Well Development and Well Purge Fluids, and SOP 4.14: Mapping with the Trimble Pathfinder Pro XR GPS System. Certain procedures, as listed, were determined to be obsolete and will be omitted from Revision 14: SOP 1.18: Deployment, Retrieval, Sampling and Maintenance of Instrumented Membrane Technology (IMT) Borehole-Liner Systems, and SOP 2.12: Ground Water Monitor Well and Equipment Maintenance.

## 6.2. New Procedures

There were no new procedures developed during this reporting period.

## 6.3. Self-assessments

ERD participates in self-assessments, both formal and informal. These assessments are used to evaluate work activities to procedural, QA, management, and Integrated Safety Management System (ISMS) practices. External regulatory agencies and management also performs frequent management observations, verifications, and inspections (MOVIs) during ERD work activities. There were a total of eighteen MOVIs, and one formal management self-assessment (MSA) of drilling activities at Site 300; High Explosives Process Area Operable Unit. The MSA was actually performed late November 2010, but not reported in the 2010 Annual CMR. There were no issues or deficiencies noted during the MSA, but a noteworthy practice was acknowledged and recorded. Issues and deficiencies observed during assessments are tracked from inception to resolution using the institutional Issues Tracking System (ITS). To date, all ERD Site 300 work related issues and deficiencies have been successfully corrected and closed-out in the ITS.

## 6.4. Quality Issues and Corrective Actions

Quality improvement, nonconformance, and corrective action reporting is documented using the Quality Improvement Form (QIF). There were no QIFs processed during this reporting period.

## 6.5. Analytical Quality Control

Data review, validation, and verification are conducted on 100% of the incoming analytical data. Contract analytical laboratories are contractually required to provide internal quality control (QC) checks in the form of method blanks, laboratory control samples, matrix spikes, and matrix spike or sample duplicate results with every analysis. During the data validation process, the analytical QC data and associated QC acceptance criteria (control limits) are reviewed. Data qualifier flags are assigned to analytical data that fall outside the QC acceptance criteria. Data qualifier flags and their definitions are listed in the Acronyms and Abbreviations in the Tables section of this report. The qualifier flags, when they exist, appear next to the analytical data presented in the treatment facility compliance tables of this report. Because rejected data are not used for decision-making, the rejected analytical data are not displayed in the tables, only the "R" flag is presented. Data is qualified as rejected only when there is a serious deficiency in the ability to analyze the sample and meet QC criteria. There were no significant data anomalies to report this semester.

During a Department of Energy Consolidated Auditing Program (DOECAP) audit of BC Laboratories conducted in May 2011, several Priority 1 findings were identified. A memo (see Attachment 1) describing the findings was developed and distributed to ERD Program Leaders and Environmental Analysts. Potentially impacted data were evaluated and the impact was determined to be negligible. BC Laboratories is in the process of correcting the findings.

## 6.6. Field Quality Control

Quality control is implemented during the sample collection process in the field. Ten percent of samples are collocated (5% intralaboratory and 5% interlaboratory). Field blanks and trip blanks are used to identify contamination that may occur during sample collection, transportation, or handling of samples at the analytical laboratory. Equipment blanks are used to determine the effectiveness of decontamination processes of portable equipment used for purging and/or sample collection. There were no cross-contamination issues indicated by trip blank, field blank, or equipment blank analyses during this reporting period.

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# Figures

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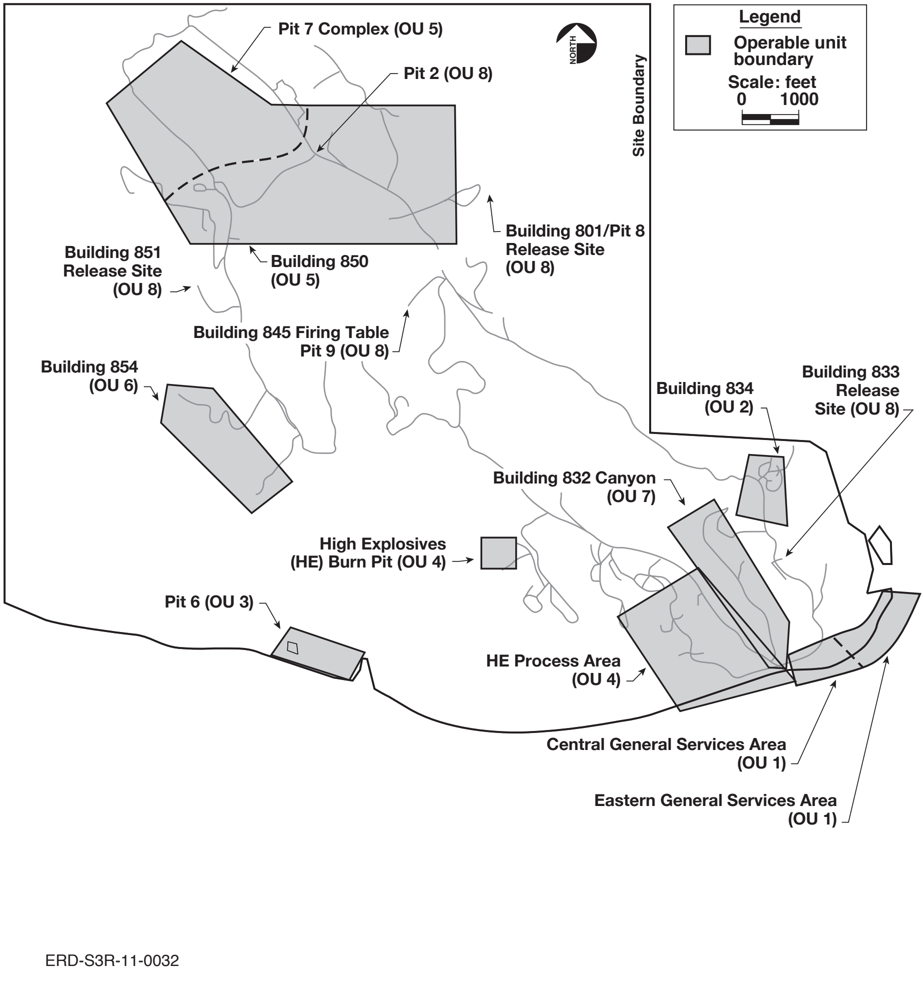



**Figure 2-1. Site 300 map showing OU locations.**

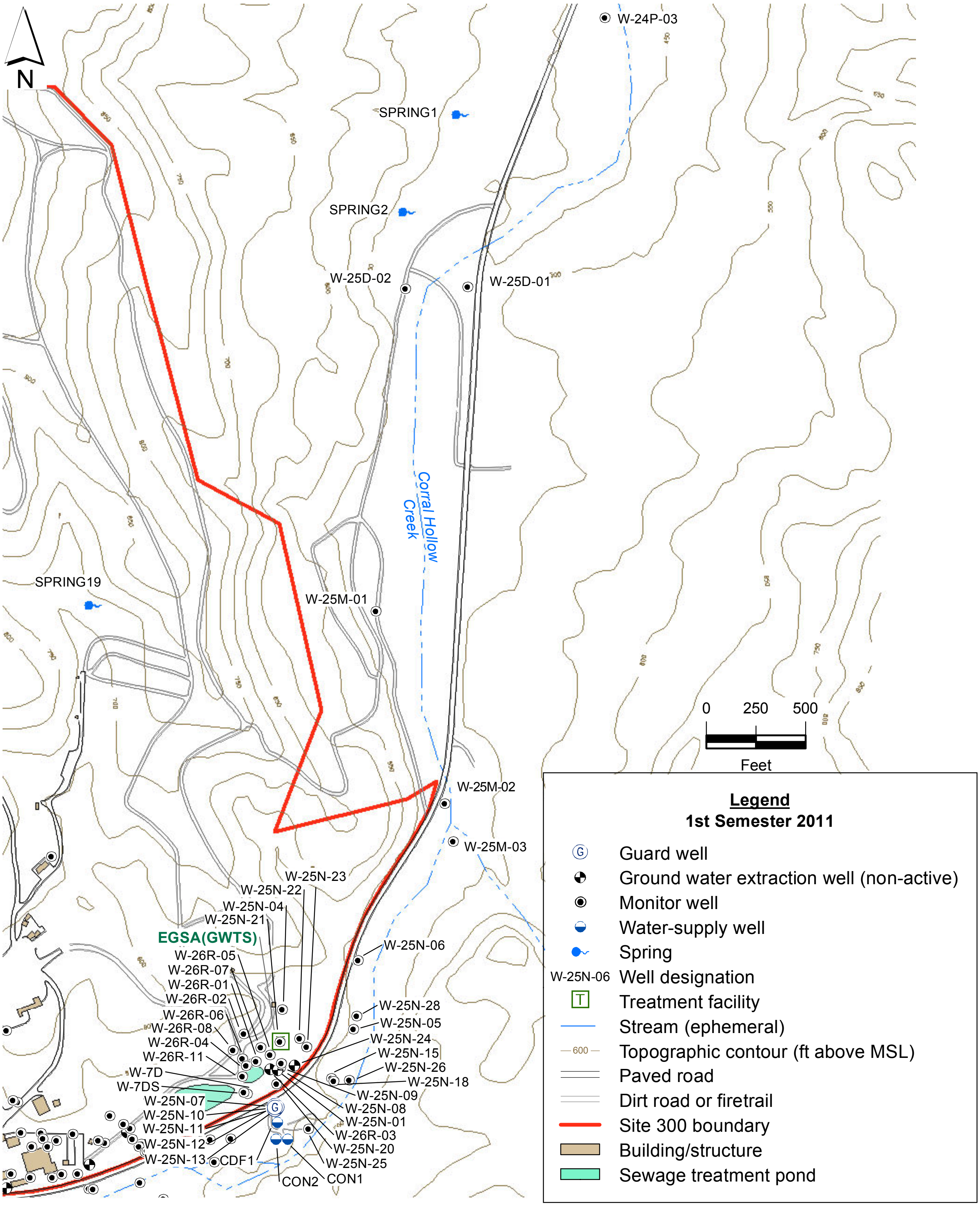



**Figure 2.1-1. Eastern General Services Area Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.**

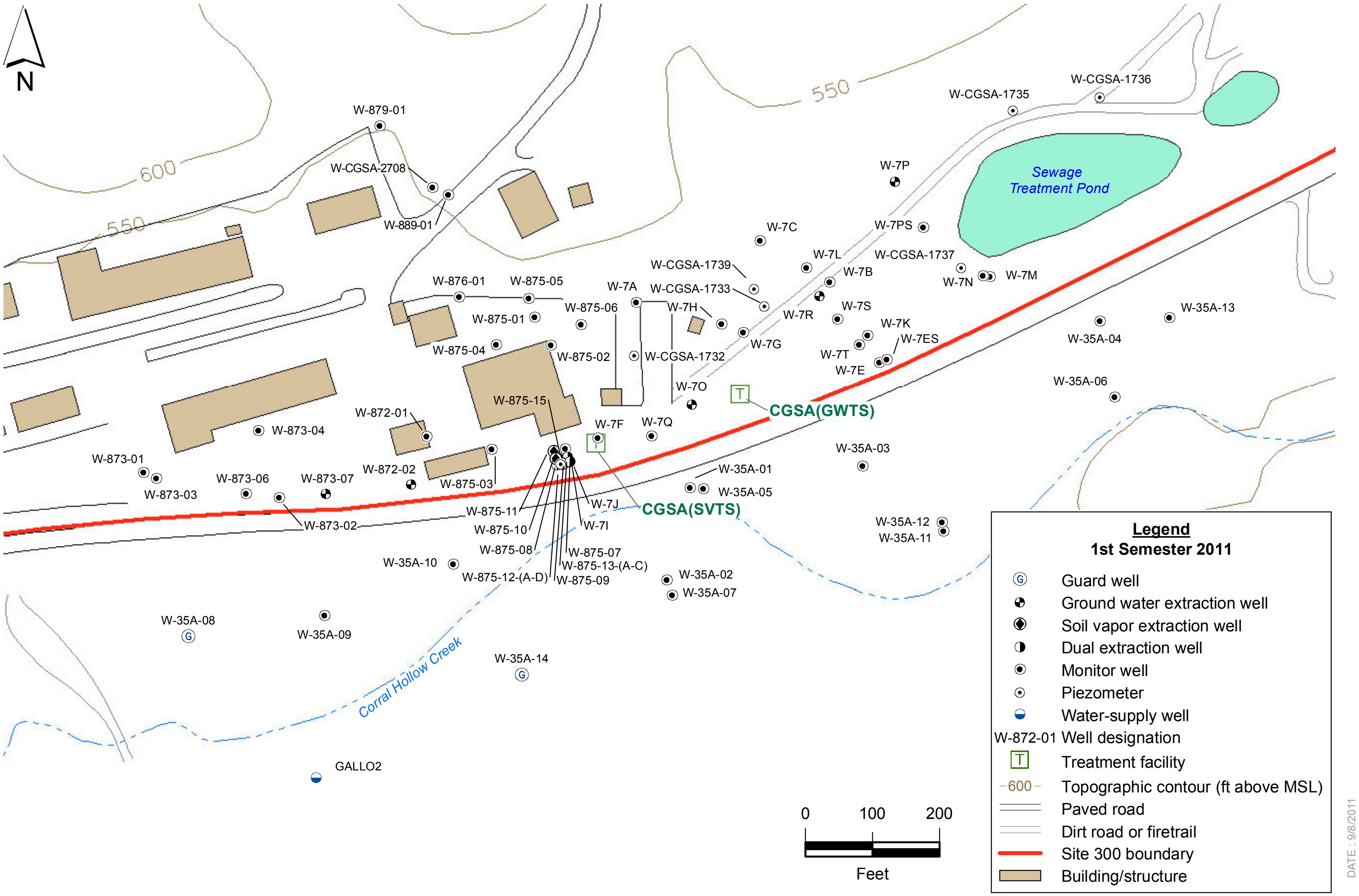



**Figure 2.1-2. Central General Services Area Operable Unit site map showing monitor, extraction and water-supply wells, and treatment facilities.**

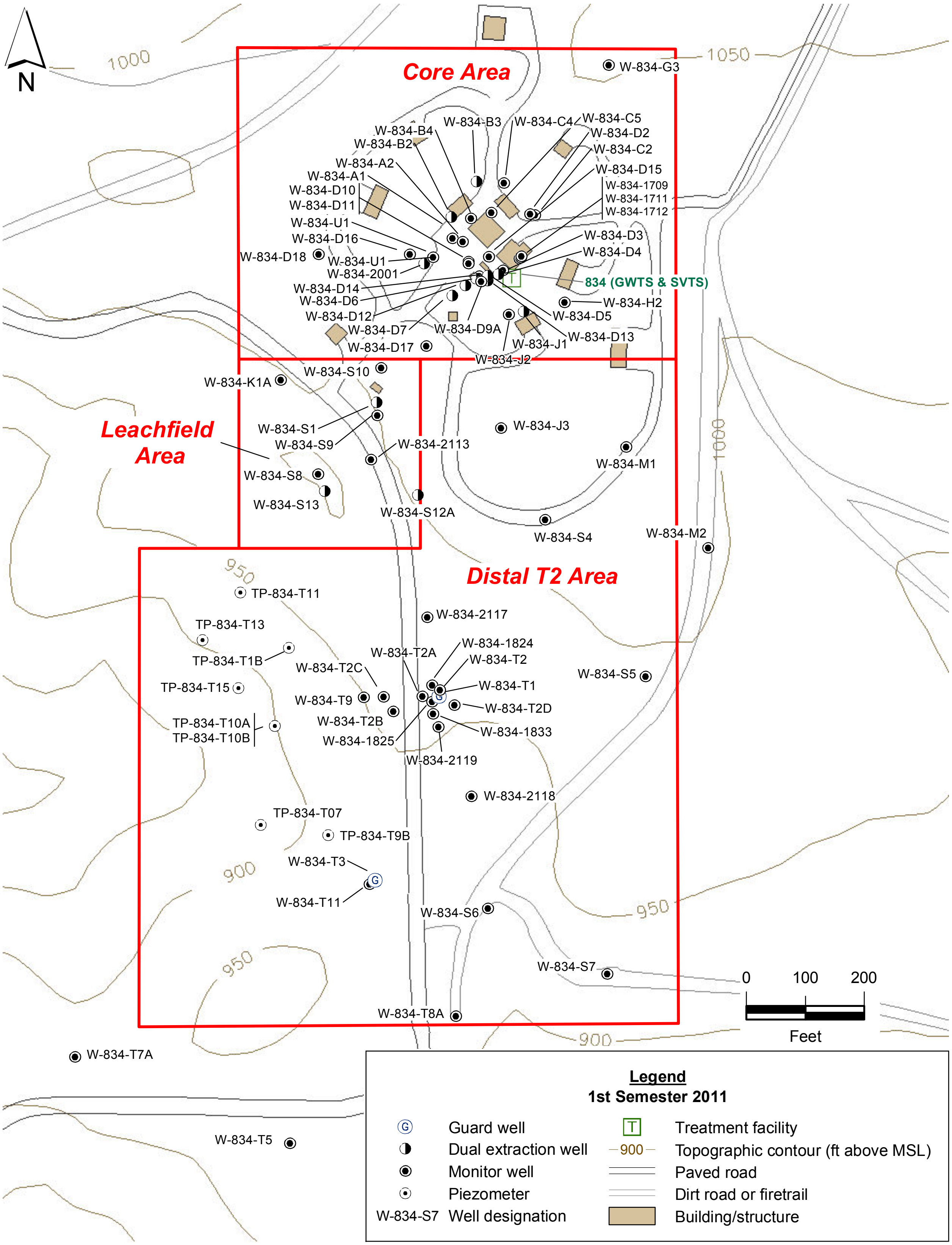



**Figure 2.2-1. Building 834 Operable Unit site map showing monitor and extraction wells, and treatment facilities.**

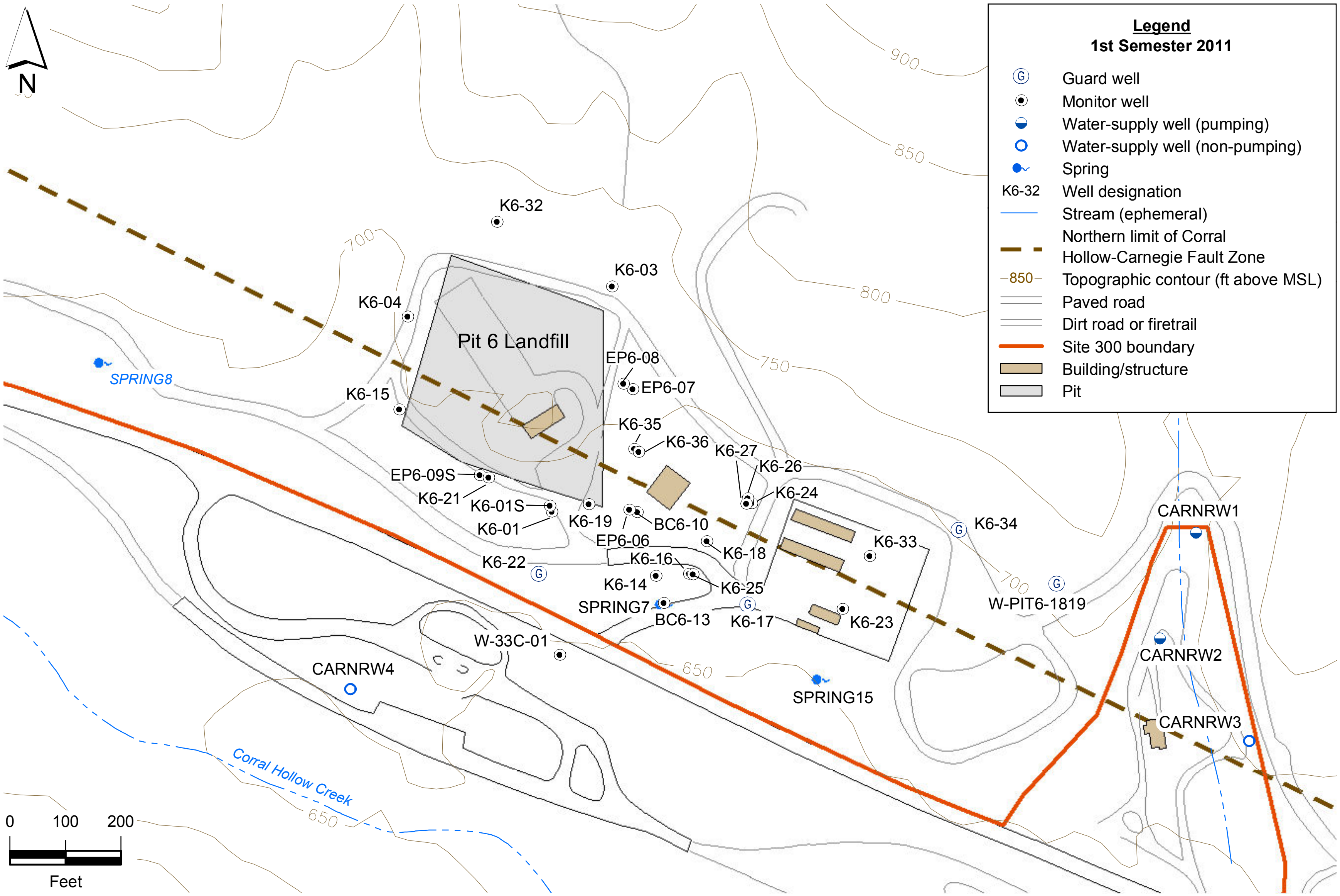



**Figure 2.3-1. Pit 6 Landfill Operable Unit site map showing monitor and water-supply wells.**

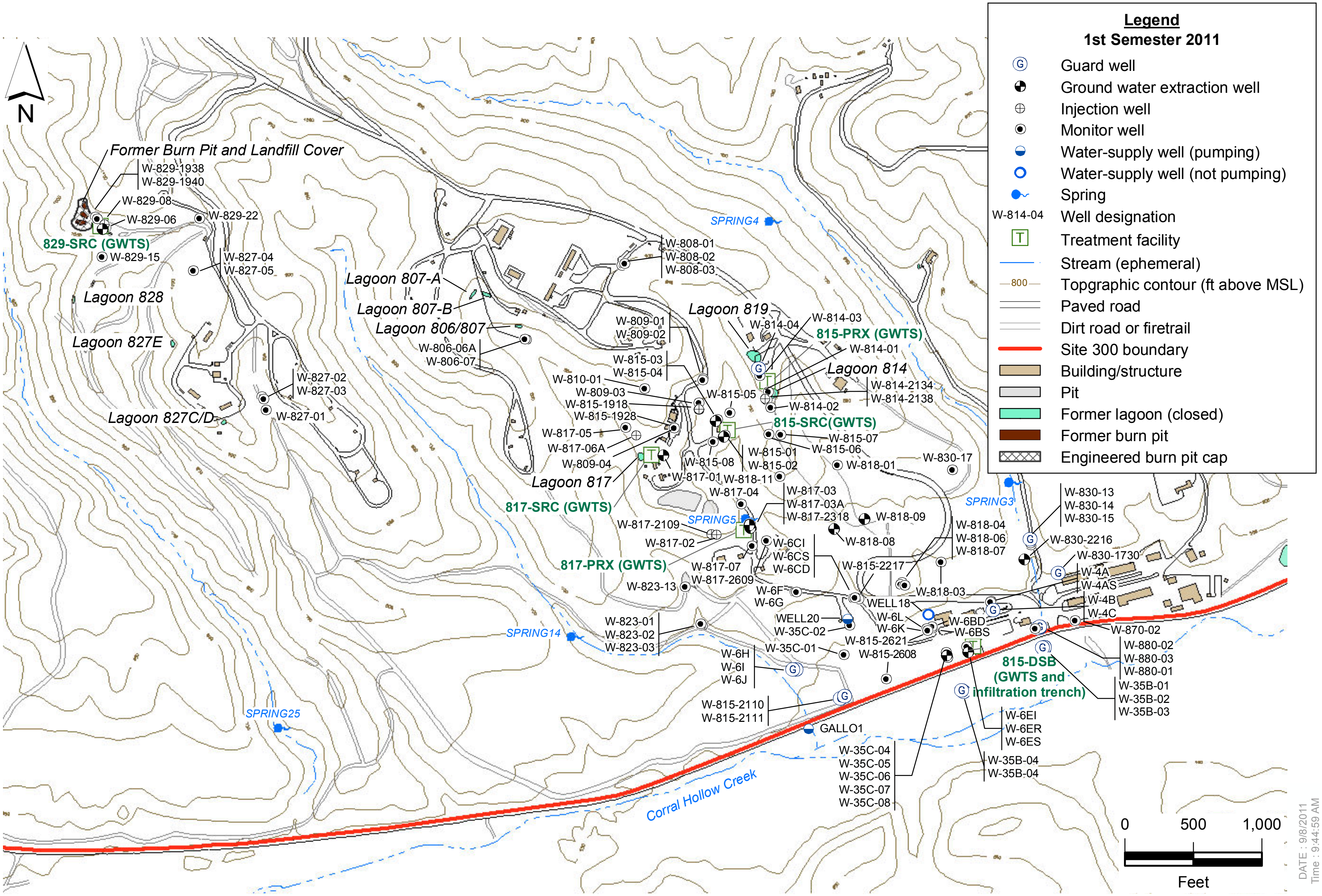



**Figure 2.4-1. High Explosives Process Area Operable Unit site map showing monitor, extraction, injection and water-supply wells, and treatment facilities.**

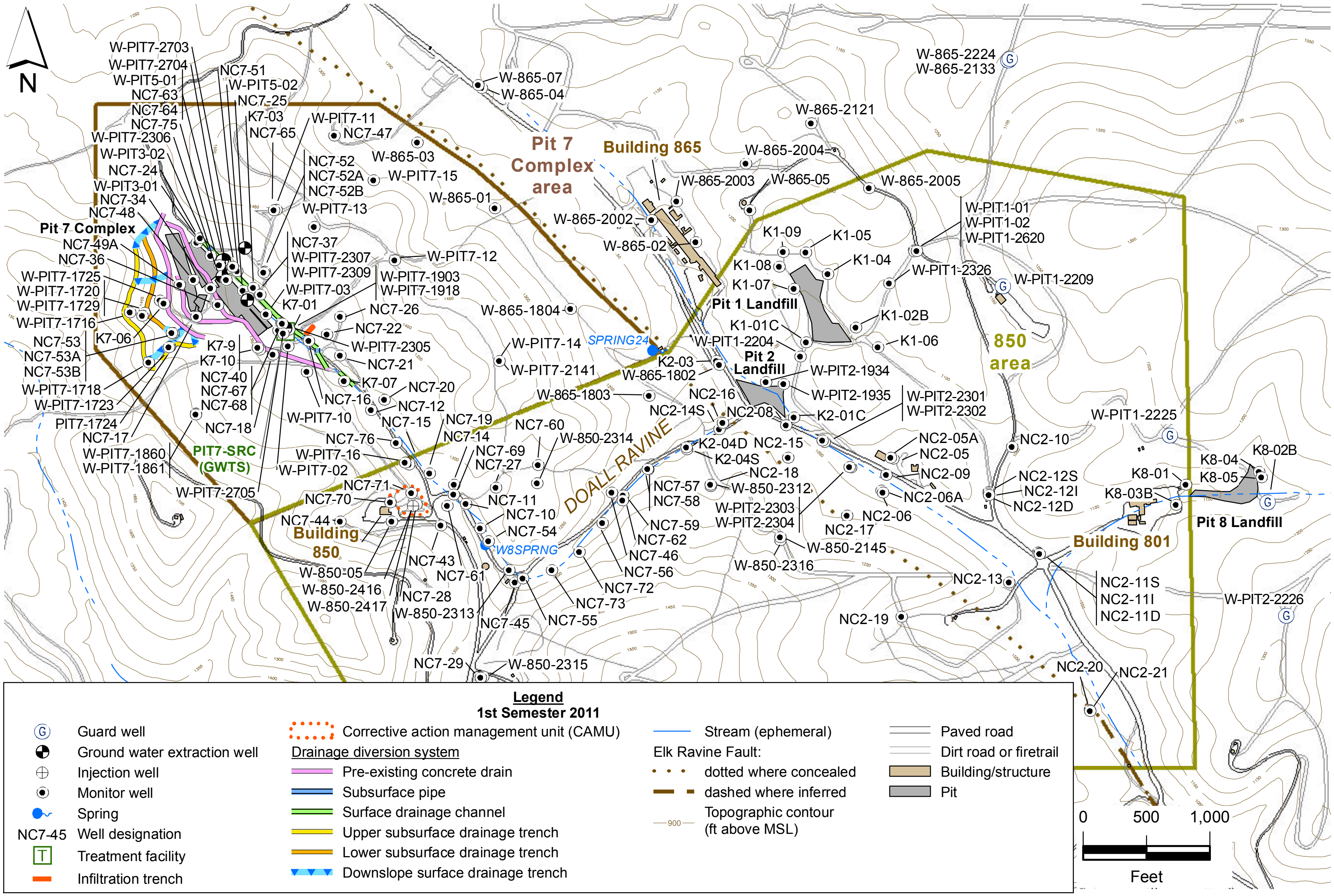



**Figure 2.5-1. Building 850 and Pit 7 Complex area site map showing monitor, extraction, and injection wells, treatment facility and other remediation features.**

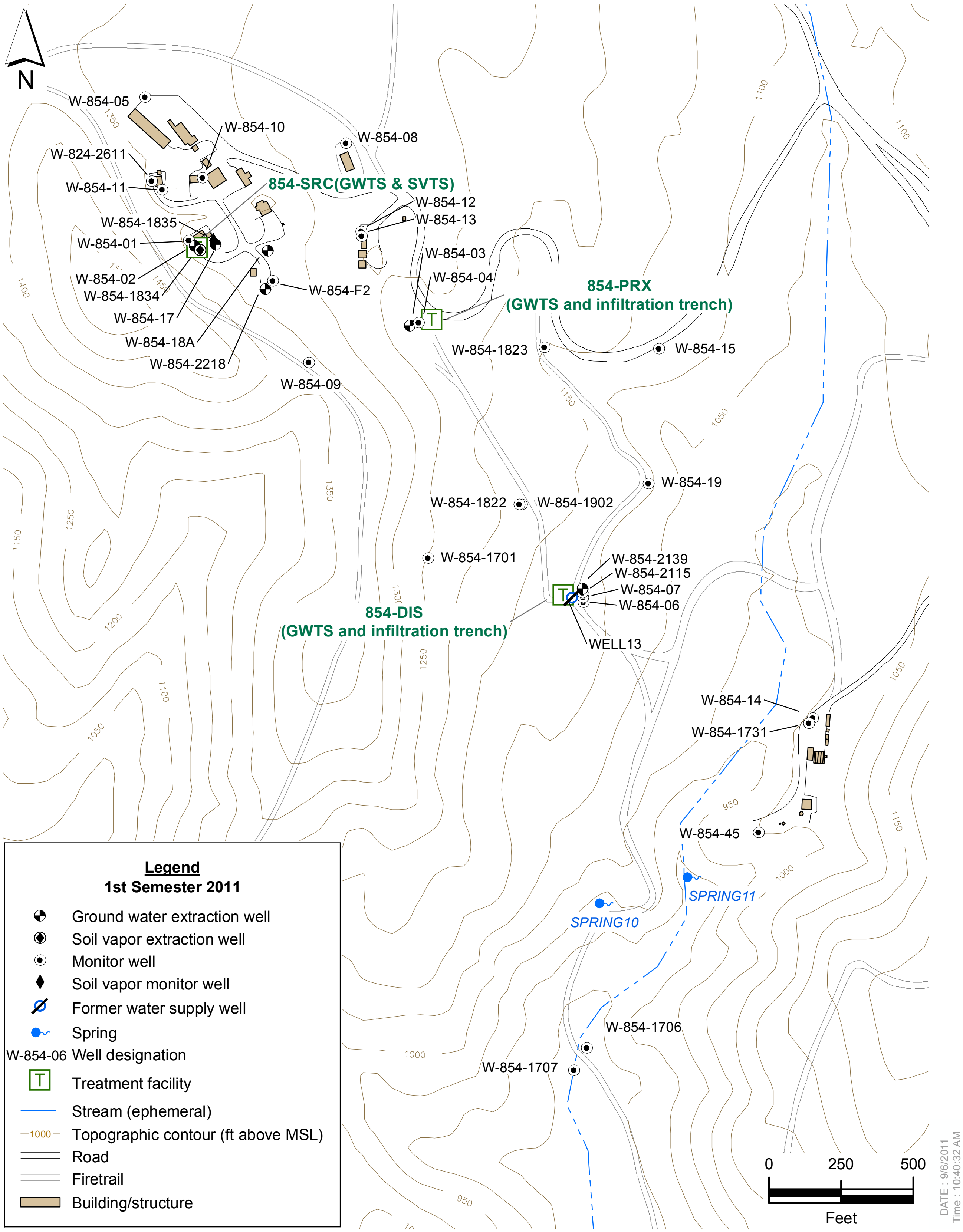
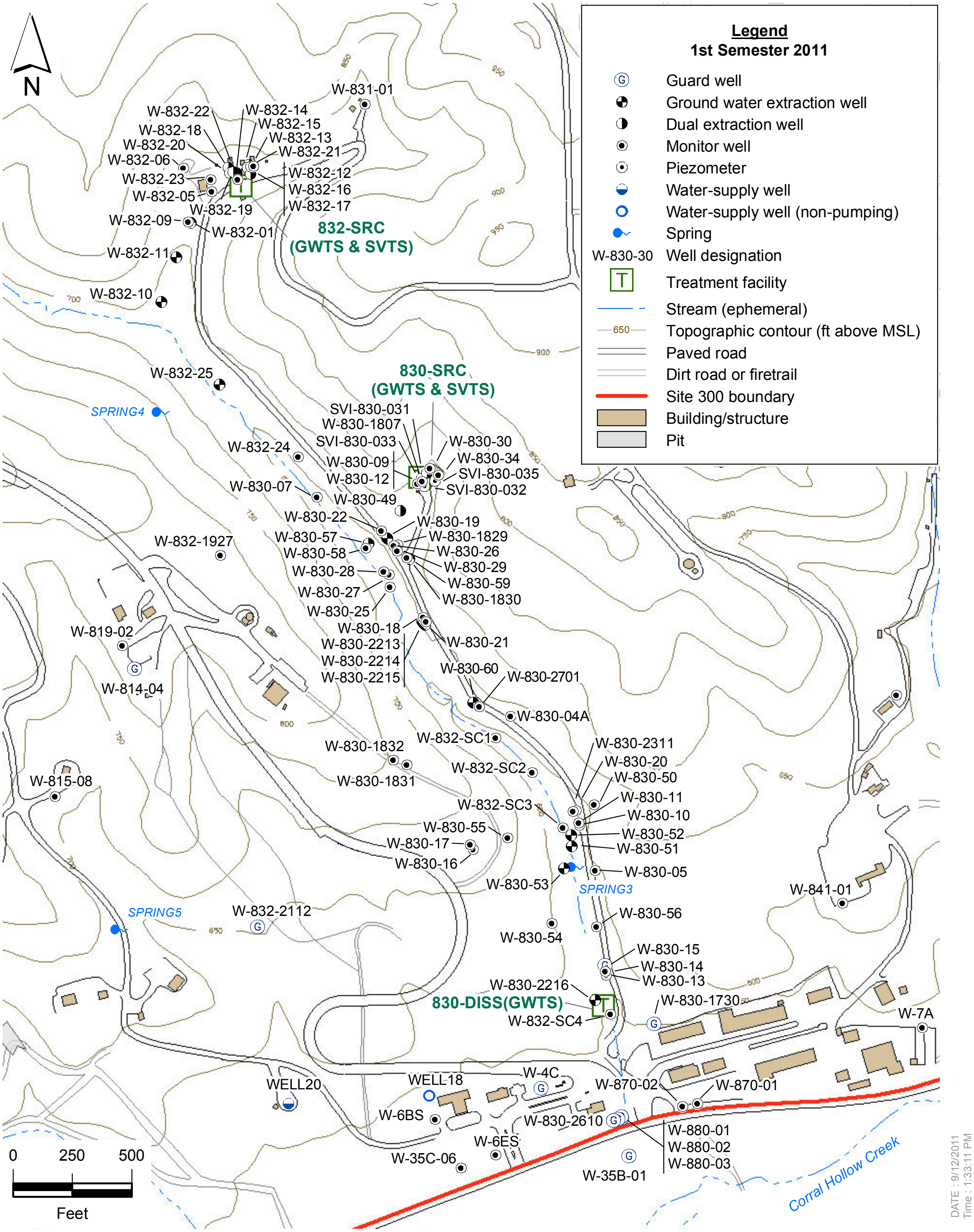



**Figure 2.6-1. Building 854 Operable Unit site map showing monitor and extraction wells, and treatment facilities.**

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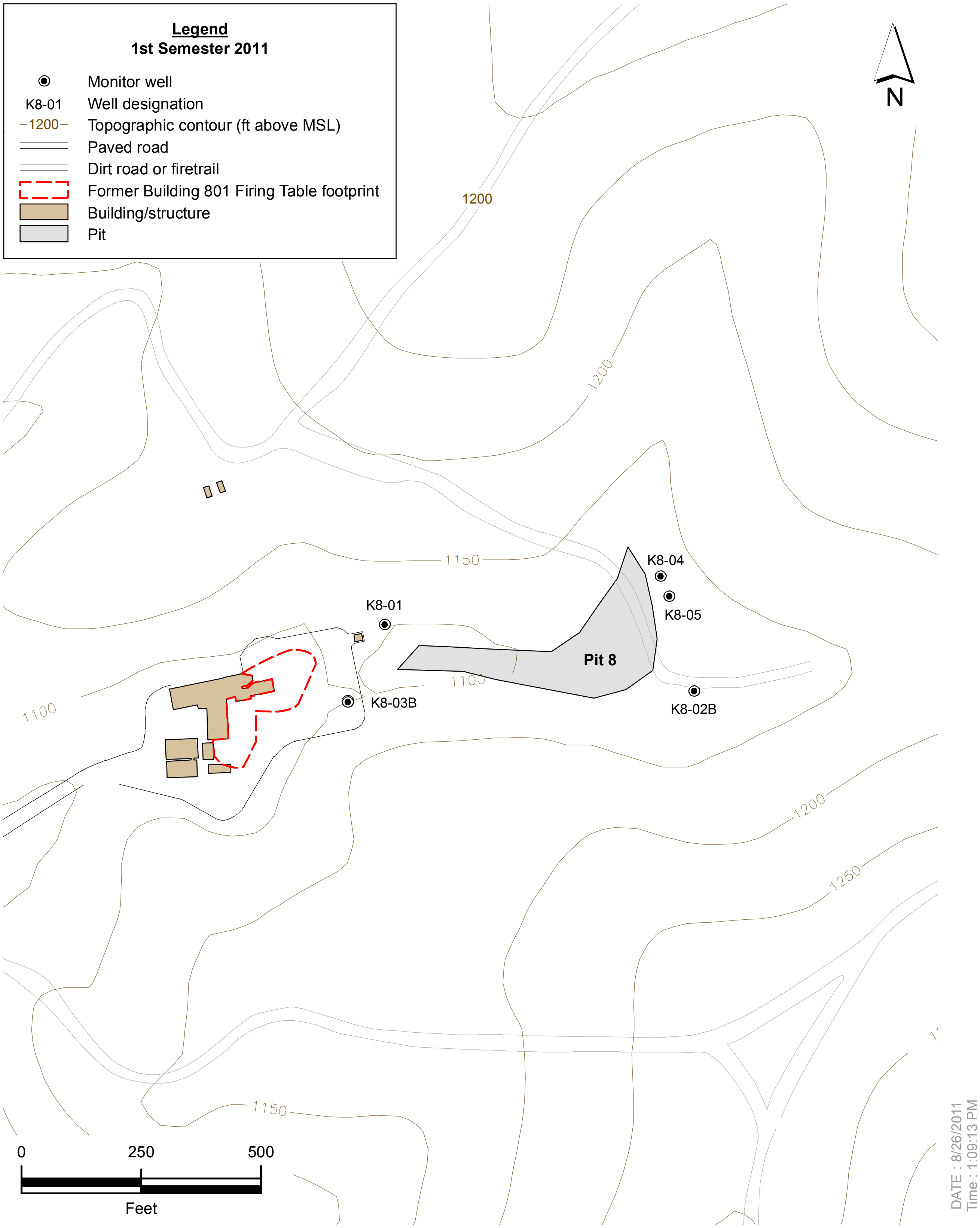



**Figure 2.8-1. Building 801 Firing Table and Pit 8 Landfill site map showing monitor well locations.**

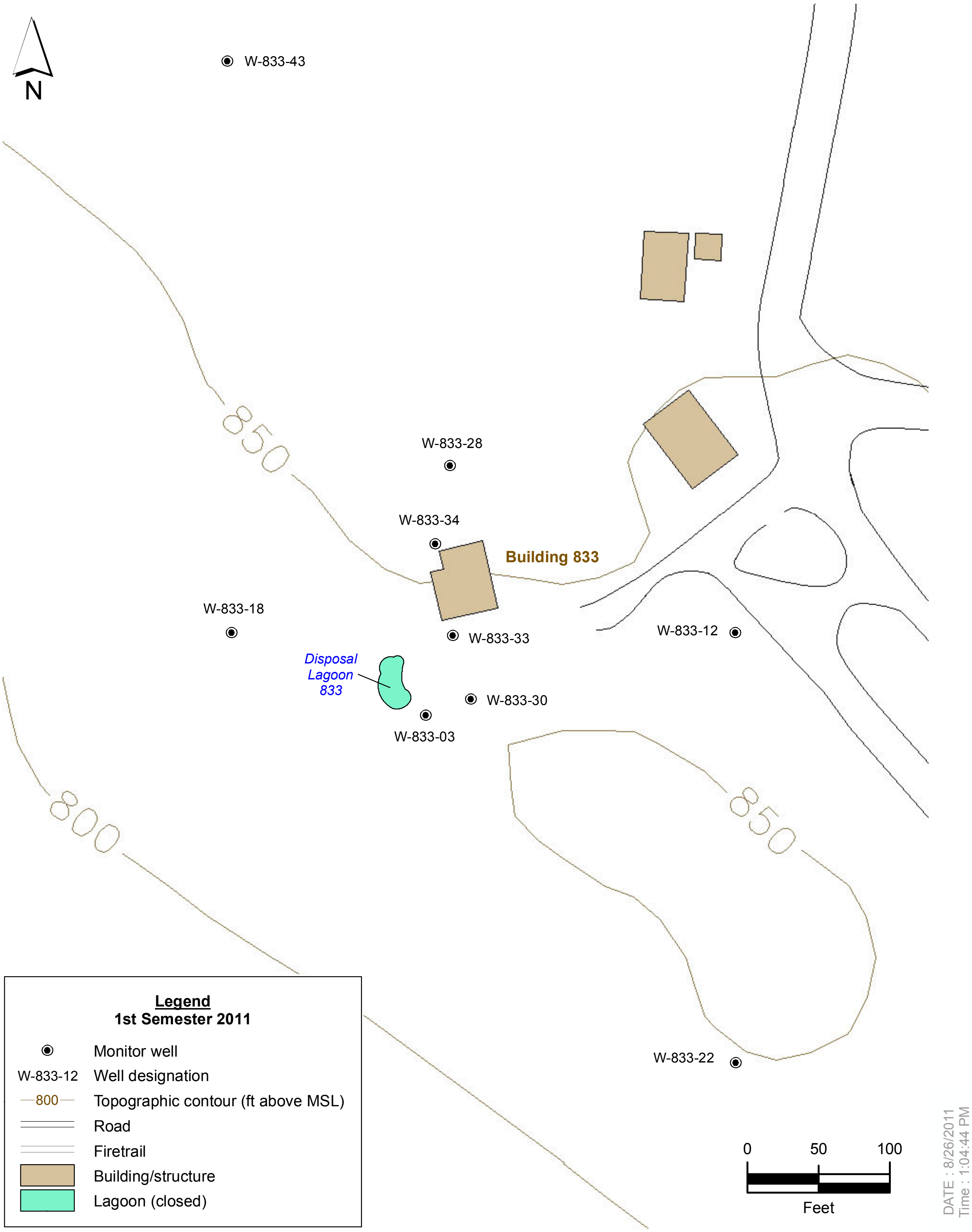



**Figure 2.8-2. Building 833 site map showing monitor well locations.**

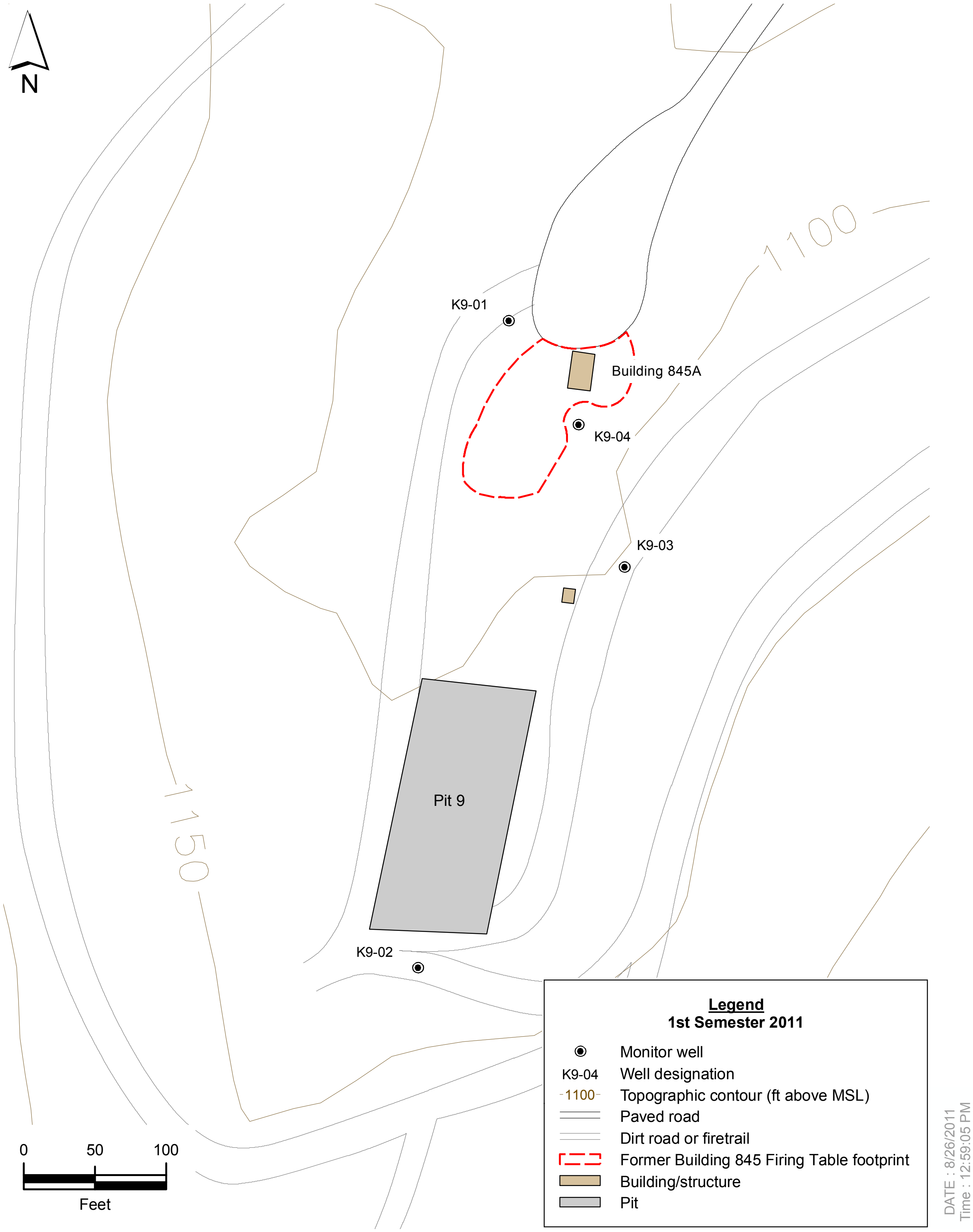



**Figure 2.8-3. Building 845 Firing Table and Pit 9 Landfill site map showing monitor well locations.**

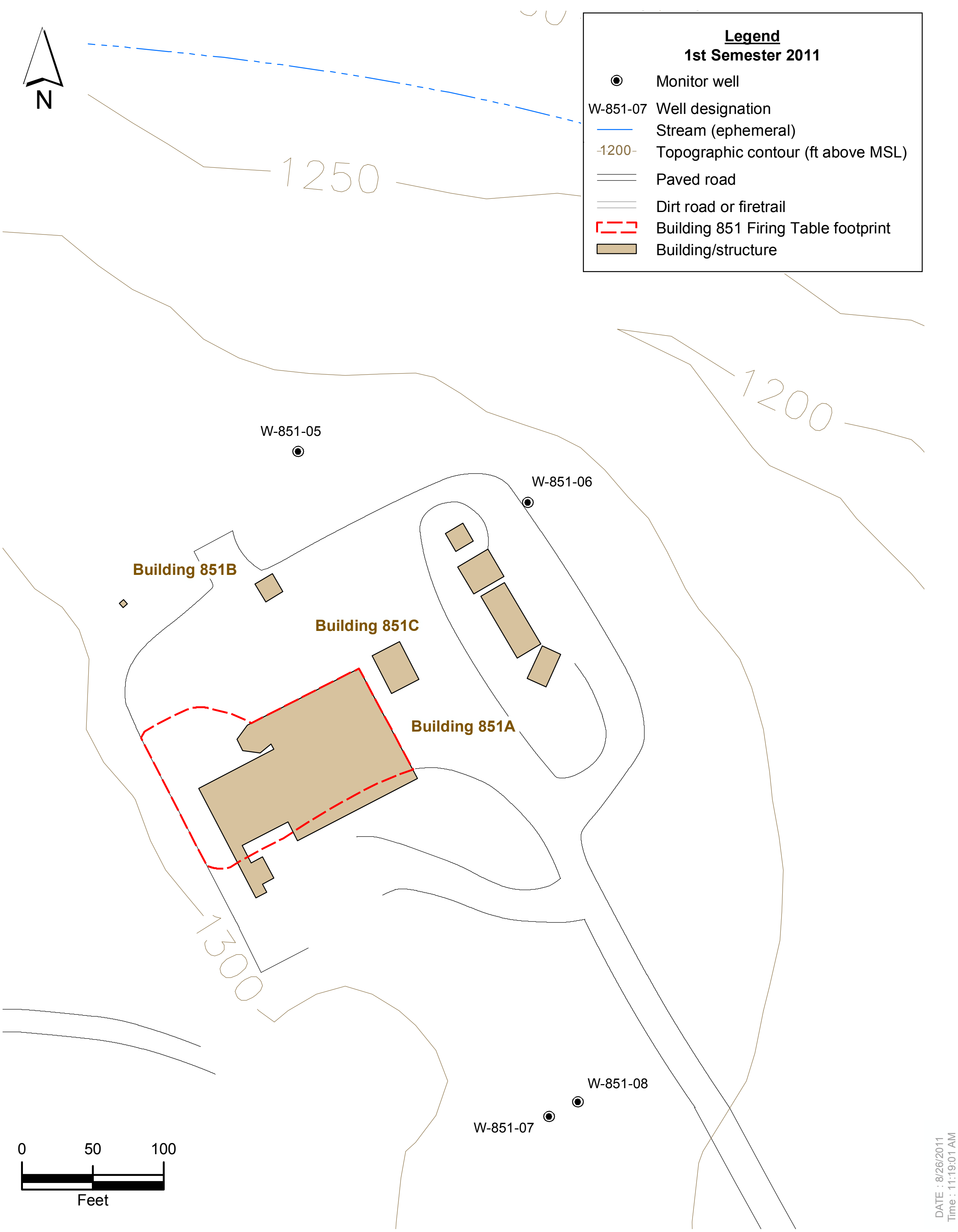



**Figure 2.8-4. Building 851 Firing Table site map showing monitor well locations.**

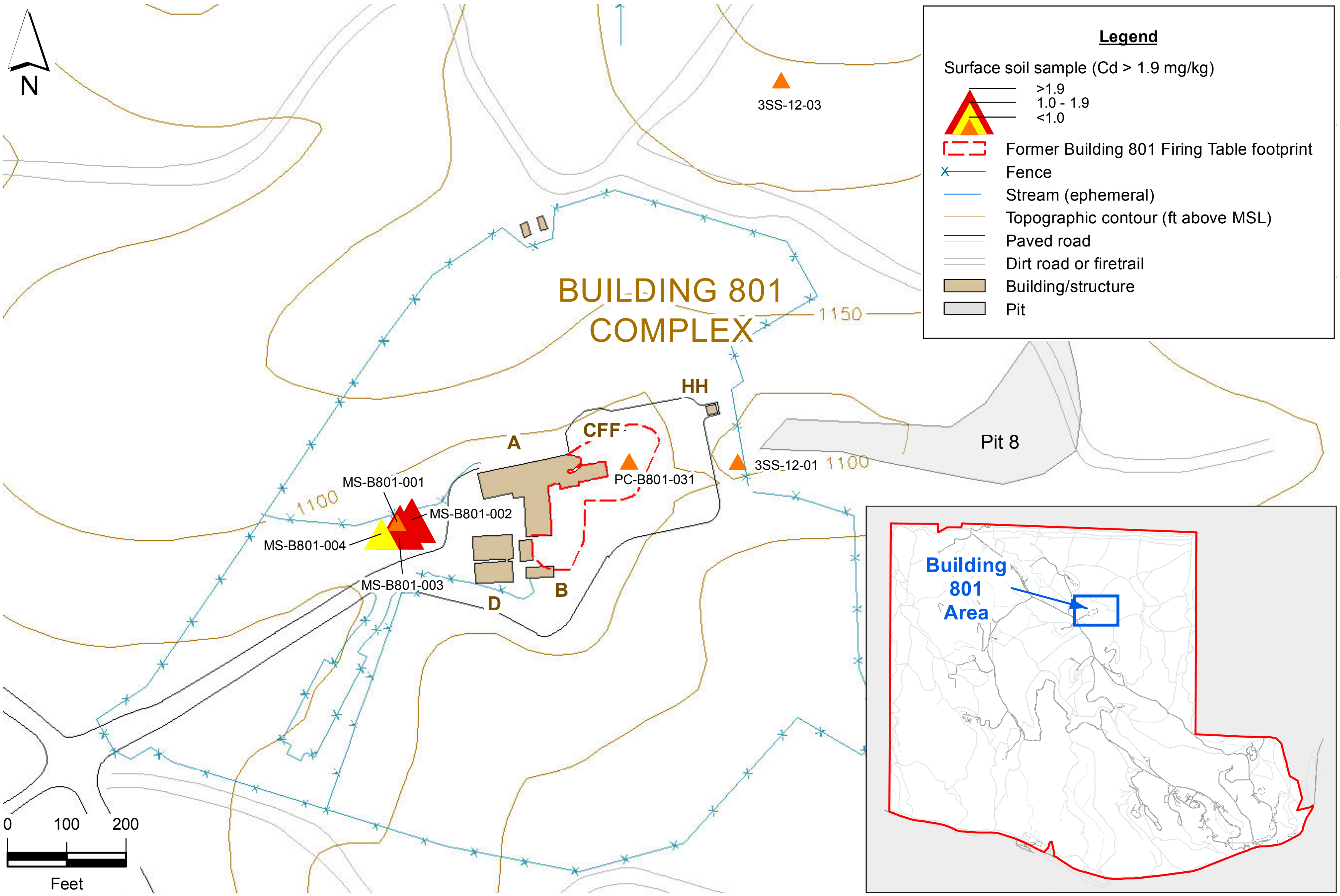



**Figure 4.2-1. Surface soil in the vicinity of Building 801 exceeding background levels (1.9 mg/kg) for cadmium and posing a potential ecological hazard.**

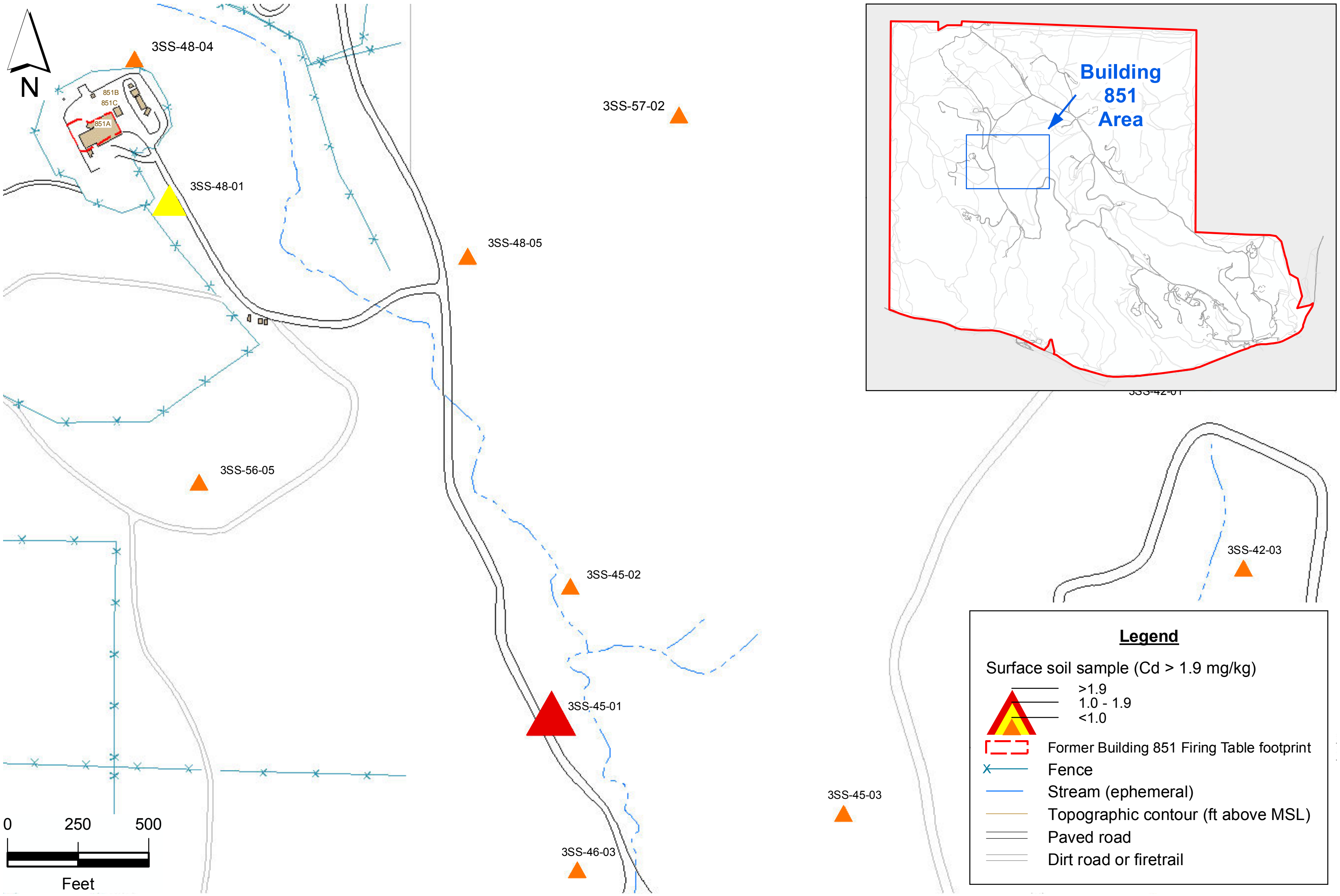
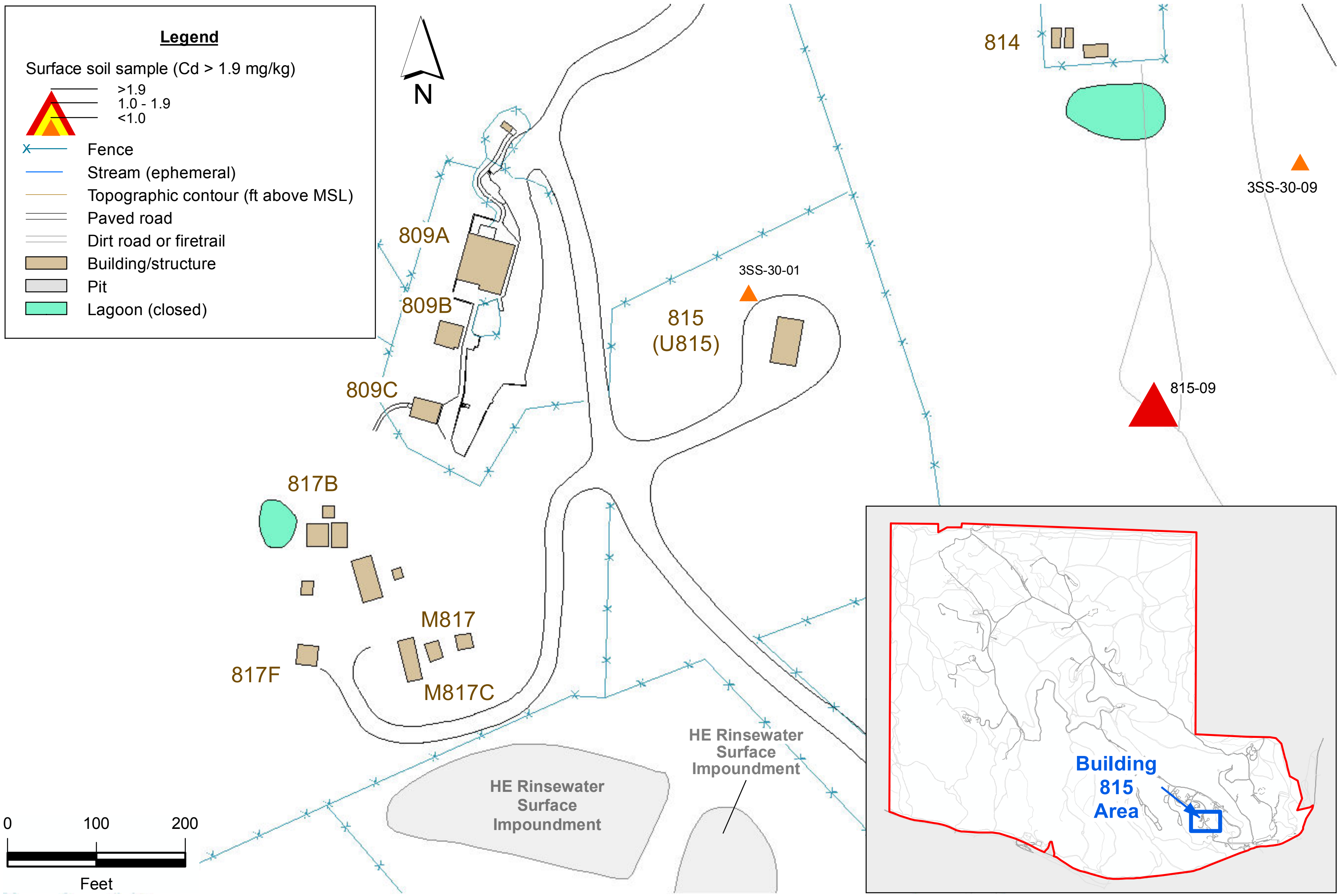



**Figure 4.2-2. Surface soil in the vicinity of Building 851 exceeding background levels (1.9 mg/kg) for cadmium and posing a potential ecological hazard.**

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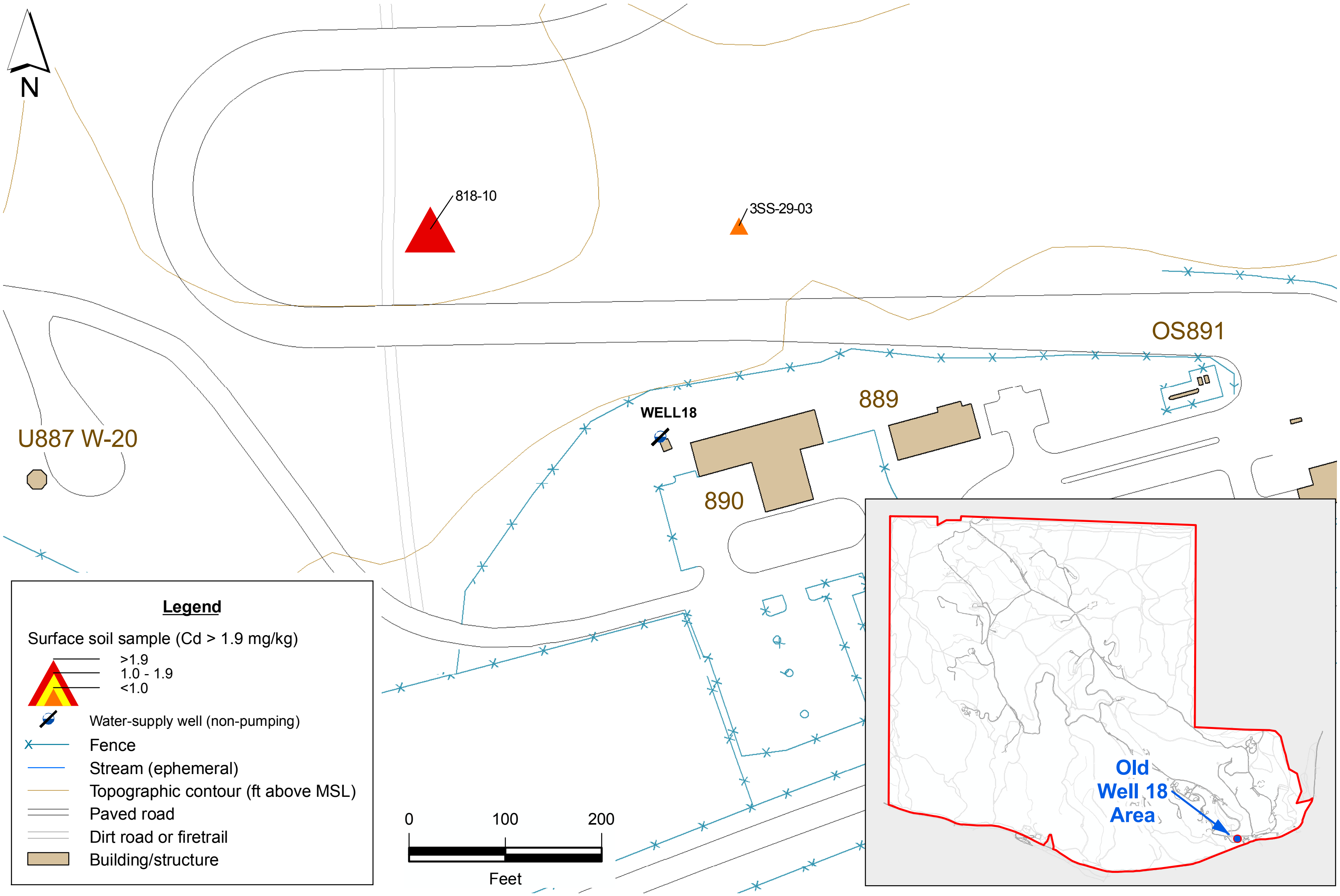


**Figure 4.2-4. Surface soil in the vicinity of HE Process Area Old Well 18 exceeding background levels (1.9 mg/kg) for cadmium and posing a potential ecological hazard.**

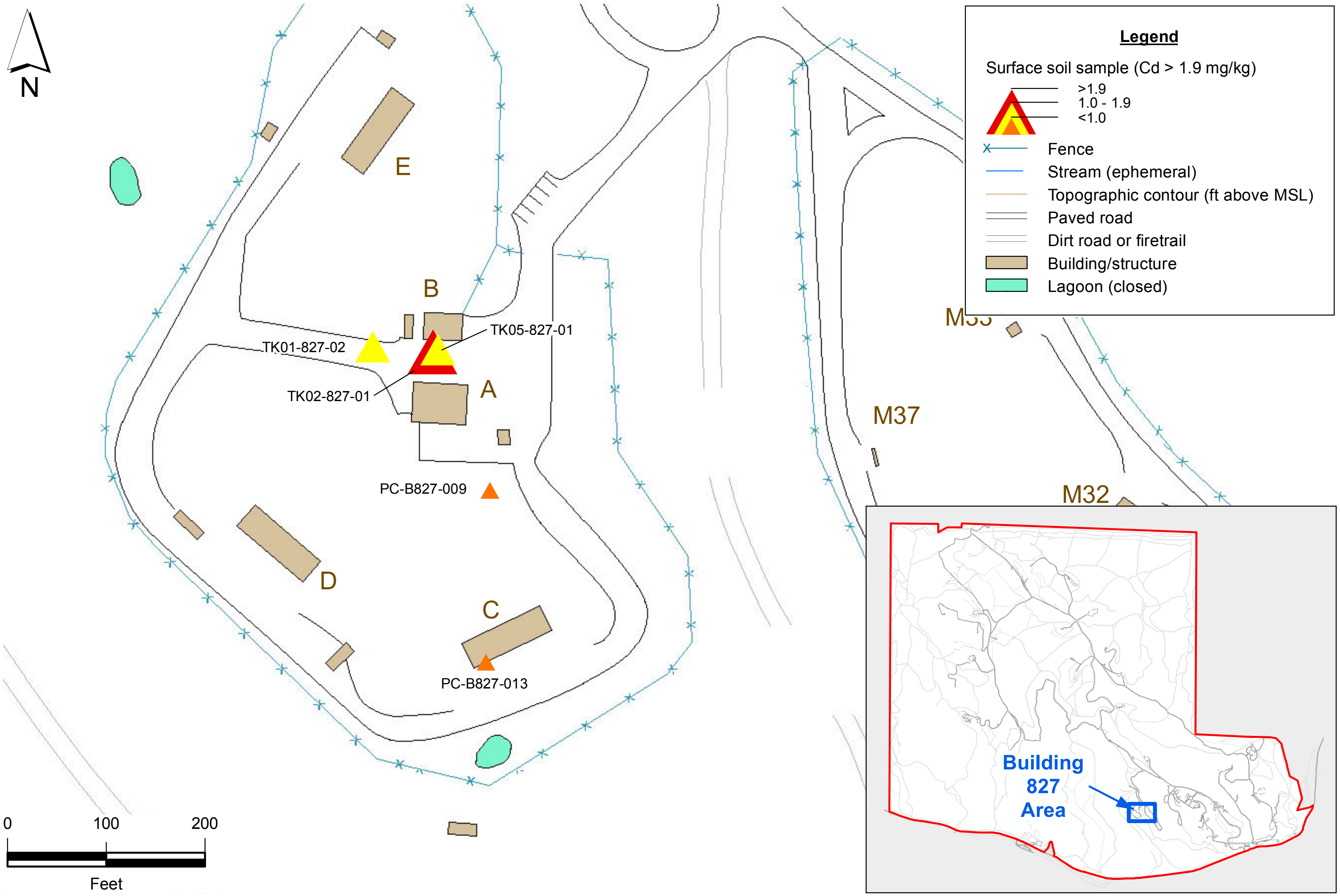


**Figure 4.2-5. Surface soil in the vicinity of HE Process Area Building 827 exceeding background levels (1.9 mg/kg) for cadmium and posing a potential ecological hazard.**

# Tables

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# Acronyms and Abbreviations

| | |
|---|---|
| 4-ADNT | 4-Amino-2,6-dinitrotoluene |
| 815 | Building 815 |
| 817 | Building 817 |
| 829 | Building 829 |
| 832 | Building 832 |
| 834 | Building 834 |
| 850 | Building 850 |
| 854 | Building 854 |
| A | Annual |
| As N | As nitrogen |
| As $CaCO_3$ | As calcium carbonate |
| BTEX | Benzene, toluene, ethyl benzene, and xylene |
| °C | Degrees Celsius |
| C12-C24 | Diesel range organic compounds in the carbon 12 to carbon 24 range |
| CAL | Contracted analytical laboratories |
| CAMU | Corrective Action Management Unit |
| CDFG | California Department of Fish and Game |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CFE | Carbon filter effluent |
| CFI | Carbon filter influent |
| CF2I | Second aqueous phase granular carbon filter influent |
| CF3I | Third aqueous phase granular carbon filter influent |
| cfm | Cubic feet per minute |
| CFV2 | Second vapor phase granular activated carbon filter effluent |
| CGSA | Central General Services Area |
| CHC | Corral hollow creek |
| CMP/CP | Compliance Monitoring Plan/Contingency Plan |
| CMR | Compliance Monitoring Report |
| $CO_2$ | Carbon dioxide |
| COC | Contaminants of Concern |
| DCA | Dichloroethane |
| DCE | Dichloroethylene or dichloroethene |
| DIS | Discretionary sampling (not required by the CMP) |
| DISS | Distal south |
| DMW | Detection monitor well |
| DOE | Department of Energy |
| DSB | Distal Site Boundary |
| DTSC | Department of Toxic Substances Control |
| DUP | Duplicate or collocated QC sample |

| | |
|---|---|
| E | Effluent (acronym found in Treatment Facility Sampling Plan Tables) |
| E | Sample to be collected during even numbered years (i.e., 2012) (acronym found in Sampling Plan Tables) |
| EcoSSLs | Ecological Soil Screening Levels |
| EGSA | Eastern General Services Area |
| EIS/EIR | Environmental Impact Statement/Environmental Impact Report |
| EPA | Environmental Protection Agency |
| ERD | Environmental Restoration Department |
| ES&H | Environmental Safety and Health |
| EV | Effluent vapor |
| EW | Extraction well |
| ft | Feet |
| $ft^3$ | Cubic feet |
| g | Gram(s) |
| GAC | Granular activated carbon |
| gal | Gallon(s) |
| GIS | Geographic Information Systems |
| gpd | Gallons per day |
| gpm | Gallons per minute |
| GSA | General Services Area |
| GTU | Ground Water Treatment Unit. |
| GW | Guard well |
| GWTS | Ground Water Treatment System |
| HE | High Explosives |
| HEPA | High Explosives Process Area |
| H-H | Hetch-Hetchy |
| HMX | High-Melting Explosive |
| HQ | Hazard quotient |
| HSU | Hydrostratigraphic unit |
| I | Influent |
| ICP-MS | Inductively Coupled Plasma - Mass Spectrometry |
| ISMA | *In Situ* Microcosm Array |
| ISMS | Integrated Safety Management System |
| ITS | Issues Tracking System |
| IV | Influent vapor |
| IW | Injection well |
| IWS | Integrated Work Sheet |
| K-40 | Potassium-40 |
| $kft^3$ | thousands of cubic feet |
| kg | Kilograms |
| kgal | Thousands of gallons |
| km | Kilometers |
| LCS | Laboratory Control Sample |

| | |
|---|---|
| LHC | Light hydrocarbon |
| LLNL | Lawrence Livermore National Laboratory |
| µg/L | Micrograms per liter |
| $\mu g/m^3$ | Micrograms per meters cubed |
| µmhos/cm | Micro ohms per centimeter |
| µS | Microsiemens |
| M | Monthly |
| MCL | Maximum Contaminant Level |
| Mgal | Millions of gallons |
| Mg/kg/d | Milligram per kilogram per day |
| mg/L | Milligrams per liter |
| MNA | Monitored Natural Attenuation |
| MOVI | Management observations, verifications, and inspections |
| MSA | Management self-assessment |
| MSL | Mean Sea Level |
| MTU | Miniature Treatment Unit |
| mv | Millivolts |
| MWB | Monitor well used for background |
| N | No |
| NB | Nitrobenzene |
| $N_2$ | Nitrogen |
| $NO_3$ | Nitrate |
| NA | Not applicable |
| NT | Nitrotoluene |
| NTU | Nephelometric turbidity units |
| O | Sample to be collected during odd numbered years (i.e., 2013) |
| ORP | Oxidation/reduction potential |
| OU | Operable unit |
| O&M | Operations and Maintenance |
| $P/PO_4$ | Phosphorous |
| PCBs | Polychlorinated biphenyls |
| PCE | Tetrachloroethene |
| pCi/L | PicoCuries per liter |
| pH | A measure of the acidity or alkalinity of an aqueous solution |
| PHG | Public Health Goal |
| PLC | Programmatic logic control |
| $ppb_v$ | Parts per billion by volume |
| $ppm_v$ | Parts per million on a volume-to-volume basis |
| PBA | Programmatic Biological Assessment |
| PRX | Proximal |
| PRXN | Proximal north |
| PSDMP | Post-Monitoring Shutdown Plan |
| PTMW | Plume Tracking Monitor Well |

| | |
|---|---|
| PTU | Portable Treatment Unit |
| Q | Quarterly |
| QAPP | Quality Assurance Project Plan |
| QA/QC | Quality assurance/quality control |
| QIF | Quality Improvement Form |
| RAOs | Remedial Action Objectives |
| R1 | Receiving water sampling point located 100 ft upstream |
| R2 | Receiving water sampling point located 100 ft downstream |
| RDX | Research Department explosive |
| REA | Reanalysis |
| Redox | Reduction-oxidation reaction |
| REX | Resample |
| ROD | Record of Decision |
| RPM | Remedial Project Manager |
| RWQCB | Regional Water Quality Control Board |
| S | Semi-annual |
| Scfm | Standard cubic feet per minute |
| SOP | Standard Operating Procedure |
| SOW | Statement of work |
| SPACT | Sample Planning and Chain of Custody Tracking |
| SPR | Spring |
| SRC | Source |
| STU | Solar-powered Treatment Unit |
| SVE | Soil Vapor Extraction |
| SVTS | Soil Vapor Treatment System |
| SVI | Soil Vapor Influent |
| SWEIS | Site-Wide Environmental Impact Statement |
| SWFS | Site Wide Feasibility Study |
| SWRI | Site-Wide Remedial Investigation |
| TBOS | Tetrabutyl orthosilicate |
| TCA | Trichloroethane |
| TFRT | Treatment Facility Real Time |
| THMs | trihalomethanes |
| TKEBS | Tetrakis (2-ethylbutyl) silane |
| TCE | Trichloroethene |
| TDS | Total dissolved solids |
| TF | Treatment facility |
| TNB | Trinitrobenzene |
| TNT | Trinitrotoluene |
| TRV | Toxicity Reference Value |
| $^{235}U/^{238}U$ | Atom ratio of the isotopes uranium-235 and uranium-238 |
| U.S. | United States |

| | |
|---|---|
| USFWS | U.S. Fish and Wildlife Service |
| VCF4I | Fourth vapor phase granular activated carbon filter influent |
| VE | Vapor effluent |
| VES | Vapor extraction system |
| VI | Vapor influent |
| VOC | Volatile organic compound |
| WAA | waste accumulation area |
| WGMG | Water Guidance and Monitoring Group |
| WS | Water supply well |
| Y | Yes |

## Hydrogeologic Units

Lower $Tnbs_1$ = Lower member of the Neroly lower blue sandstone, below claystone marker bed (regional aquifer).
Qal = Quaternary alluvium.
Qls = Quaternary landslide.
Qt = Quaternary terrace.
Tmss = Miocene Cierbo Formation—lower siltstone/claystone member.
$Tnsc_{1a}$, $Tnsc_{1b}$, $Tnsc_{1c}$ = Sandstone bodies within the $Tnsc_1$ Neroly middle siltstone/claystone (1a = deepest).
$Tnbs_1$ = Lower member of the Neroly lower blue sandstone.
$Tnbs_0$ = Neroly silty sandstone.
$Tnbs_2$ = Miocene Neroly upper blue sandstone.
$Tnsc_0$ = Tertiary Neroly Formation—lower siltstone/claystone member.
$Tnsc_2$ = Miocene Neroly Formation—upper siltstone/claystone member.
Tps = Pliocene non-marine unit.
Tpsg = Miocene non-marine unit (gravel facies).
Tts = Tesla Formation.
$UTnbs_1$ = Upper member of the Neroly lower blue sandstone, above claystone marker bed.
WBR = Weathered bedrock.

## Data Qualifier Flag Definitions

B = Analyte found in method blank, sample results should be evaluated.

D = Analysis performed at a secondary dilution or concentration (i.e., vapor samples).

E = The analyte was detected below the LLNL reporting limit, but above the analytical laboratory minimum detection limit.

F = Analyte found in field blank, trip blank, or equipment blank.

G = Quantitated using fuel calibration, but does not match typical fuel fingerprint.

H = Sample analyzed outside of holding time, sample results should be evaluated.

I = Surrogate recoveries were outside of QC limits.

J = Analyte was positively identified; the associated numerical value is the proximate concentration of the analyte in the sample.

L = Spike accuracy not within control limits.

O = Duplicate spike or sample precision not within control limits.

R = Sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

S = Analytical results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte cannot be verified.

T = Analyte is tentatively identified compound; result is approximate.

## Requested Analyses

| | |
|---|---|
| AS:UISO = | Uranium isotopes performed by alpha spectrometry. |
| DWMETALS:ALL = | Drinking water metals suite performed by various analytical methods. |
| E200.7:FE = | Iron performed by EPA Method 200.7. |
| E200.7:Li = | Lithium performed by EPA Method 200.7. |
| E200.7:SI = | Silica performed by EPA Method 200.7. |
| E200.8:AS = | Arsenic performed by EPA Method 200.8. |
| E200.8:CR = | Chromium performed by EPA Method 200.8. |
| E200.8:MN = | Manganese performed by EPA Method 200.8. |
| E200.8:SE = | Selenium performed by EPA Method 200.8. |
| E300.0:NO3 = | Nitrate performed by EPA Method 300.0. |
| E300.0:PERC = | Perchlorate performed by EPA Method 300.0. |
| E300.0:O-PO2 = | Orthophosphate performed by EPA Method 300.0. |
| E340.2:ALL = | Fluoride performed by EPA method 340.2. |
| E502.2:ALL = | Volatile organic compounds performed by EPA Method 502.2. |
| E601:ALL = | Halogenated volatile organic compounds performed by EPA Method 601. |
| E624:ALL = | Volatile organic compounds performed by EPA Method 624. |
| E8082A = | Polychlorinated biphenyls performed by EPA Method 8082A. |
| E8260:ALL = | Volatile organic compounds performed by EPA Method 8260. |
| E8330LOW:ALL = | High explosive compounds performed by EPA Method 8330. |
| E8330:R+H = | High explosive compounds RDX and HMX performed by EPA Method 8330. |
| E8330:TNT = | Trinitrotoluene performed by EPA Method 8330. |
| E906:ALL = | Tritium performed by EPA Method 906. |
| EM8015:DIESEL = | Diesel range organic compounds performed by modified EPA Method 8015. |
| GENMIN:ALL = | General minerals suite performed by various analytical methods. |
| MS:UISO = | Uranium isotopes performed by mass spectrometry. |
| T26METALS:ALL = | Title 26 metals. |
| TBOS:ALL = | Tetrabutylorthosilicate/ Tetrakis (2-ethylbutyl) silane. |

## Ground Water Elevation Table Notes

ABD = Abandoned.
AD = Drilling of adjacent new wells disturbed water level.
BLOC = Well Blocked.
BS = Water detected below bottom of screened interval.
CB = Installation completed as a Christy box.
DRY = No water detected in well casing at time of measurement.
FA = Flowing artesian well, water elevation converted.
FL = Flowing.
ME = Measuring error suspected.
MSL = Mean Sea Level.
MT = Measured twice.
NA = Information not available.
NM = Not Measured.
NOM = Not on field map.
PD = Predevelopment measurement.
PE = Pump Extraction.
PF = Pump not running at time of measurement.
PS = Measurement taken just before sampling.
PT = Pump test interfered with measurement.
RA = Restricted access.
UC = Unsafe conditions.
VE = Vacuum Extraction.
WE = Well equilibrium suspect.
WR = Well recovery.

**Table Summ-1. Mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Volume of ground water treated (thousands of gal) | Volume of soil vapor treated (thousands of $ft^3$) | Estimated total VOC mass removed (g) | Estimated total perchlorate mass removed (g) | Estimated total nitrate mass removed (kg) | Estimated total RDX mass removed (g) | Estimated total TBOS/ TKEBS mass removed (g) | Estimated total Uranium mass removed (g) |
|---|---|---|---|---|---|---|---|---|
| CGSA GWTS | 1,224 | NA | 220 | NA | NA | NA | NA | NA |
| CGSA SVTS | NA | 4,368 | 950 | NA | NA | NA | NA | NA |
| 834 GWTS | 28 | NA | 390 | NA | 7.7 | NA | 0.60 | NA |
| 834 SVTS | NA | 2,846 | 1,500 | NA | NA | NA | NA | NA |
| 815-SRC GWTS | 261 | NA | 5.9 | 5.5 | 98 | 42 | NA | NA |
| 815-PRX GWTS | 340 | NA | 16 | 9.0 | 110 | NA | NA | NA |
| 815-DSB GWTS | 832 | NA | 38 | NA | NA | NA | NA | NA |
| 817-SRC GWTS | <1 | NA | 0 | 0.073 | 0.20 | 0.12 | NA | NA |
| 817-PRX GWTS | 248 | NA | 13 | 22 | 96 | 7.2 | NA | NA |
| 829-SRC GWTS | <1 | NA | 0 | 0 | 0 | NA | NA | NA |
| PIT7-SRC GWTS | 25 | NA | 0.31 | 1.0 | 3.6 | NA | NA | 2.2 |
| 854-SRC GWTS | 582 | NA | 98 | 4.9 | 100 | NA | NA | NA |
| 854-SRC SVTS | NA | 483 | 31 | NA | NA | NA | NA | NA |
| 854-PRX GWTS | 70 | NA | 4.0 | 3.2 | 11 | NA | NA | NA |
| 854-DIS GWTS | 5 | NA | 0.64 | 0.11 | 0.40 | NA | NA | NA |
| 832-SRC GWTS | 61 | NA | 25 | 1.5 | 21 | NA | NA | NA |
| 832-SRC SVTS | NA | 396 | 1.5 | NA | NA | NA | NA | NA |
| 830-SRC GWTS | 735 | NA | 470 | 1.7 | 49 | NA | NA | NA |
| 830-SRC SVTS | NA | 433 | 220 | NA | NA | NA | NA | NA |
| 830-DISS GWTS | 739 | NA | 57 | 6.2 | 180 | NA | NA | NA |
| Total | 5,149 | 8,525 | 4,000 | 55 | 680 | 49 | 0.60 | 2.2 |

Notes:

815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
$ft^3$ = Cubic feet.
g = Grams.
gal = Gallons.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.
*Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign $N_2$ gas by anaerobic denitrifying bacteria.

**Table Summ-2. Summary of cumulative remediation.**

| Treatment facility | Volume of ground water treated (thousands of gallons) | Volume of soil vapor treated (thousands of Cubic feet) | Estimated total VOC mass removed (kg) | Estimated total perchlorate mass removed (g) | Estimated total nitrate mass removed (kg) | Estimated total RDX mass removed (kg) | Estimated total TBOS/ TKEBS mass removed (kg) | Estimated total Uranium mass removed (kg) |
|---|---|---|---|---|---|---|---|---|
| EGSA GWTS | 309,379 | NA | 7.6 | NA | NA | NA | NA | NA |
| CGSA GWTS | 21,456 | NA | 26 | NA | NA | NA | NA | NA |
| CGSA SVTS | NA | 137,077 | 76 | NA | NA | NA | NA | NA |
| 834 GWTS | 1,015 | NA | 43 | NA | 250 | NA | 9.5 | NA |
| 834 SVTS | NA | 303,073 | 320 | NA | NA | NA | NA | NA |
| 815-SRC GWTS | 5,407 | NA | 0.13 | 250 | 1,900 | 1.4 | NA | NA |
| 815-PRX GWTS | 6,660 | NA | 0.72 | 160 | 2,000 | NA | NA | NA |
| 815-DSB GWTS | 14,094 | NA | 0.52 | NA | NA | NA | NA | NA |
| 817-SRC GWTS | 31 | NA | 0 | 3.2 | 10 | 0.0054 | NA | NA |
| 817-PRX GWTS | 3,100 | NA | 0.13 | 280 | 1,100 | 0.085 | NA | NA |
| 829-SRC GWTS | 5 | NA | 0.00031 | 0.16 | 1.3 | NA | NA | NA |
| PIT7-SRC GWTS | 106 | NA | 0.0024 | 4.3 | 15 | NA | NA | 0.0099 |
| 854-SRC GWTS | 9,252 | NA | 5.4 | 150 | 1,800 | NA | NA | NA |
| 854-SRC SVTS | NA | 72,652 | 11 | NA | NA | NA | NA | NA |
| 854-PRX GWTS | 3,134 | NA | 0.63 | 140 | 530 | NA | NA | NA |
| 854-DIS GWTS | 43 | NA | 0.0055 | 0.72 | 3.3 | NA | NA | NA |
| 832-SRC GWTS | 757 | NA | 0.24 | 20 | 300 | NA | NA | NA |
| 832-SRC SVTS | NA | 21,119 | 2.0 | NA | NA | NA | NA | NA |
| 830-SRC GWTS | 7,812 | NA | 5.2 | 16 | 590 | NA | NA | NA |
| 830-SRC SVTS | NA | 48,159 | 51 | NA | NA | NA | NA | NA |
| 830-PRXN GWTS | 1,949 | NA | 0.26 | NA | 22 | NA | NA | NA |
| 830-DISS GWTS | 6,614 | NA | 1.5 | 54 | 1,600 | NA | NA | NA |
| Total | 390,813 | 582,080 | 550 | 1,100 | 10,000 | 1.5 | 9.5 | 0.0099 |

**Notes:**

815 = Building 815.
817 = Building 817.
829 = Building 829.
830 = Building 830.
832 = Building 832.
834 = Building 834.
854 = Building 854.
CGSA = Central General Services Area.
DIS = Distal.
DISS = Distal south.
DSB = Distal site boundary.
EGSA = Eastern General Services Area.
GWTS = Ground water treatment system.
kg = Kilograms.
NA = Not applicable.
PRX = Proximal.
PRXN = Proximal North.
RDX = Research Department Explosive.
SRC = Source.
SVTS = Soil vapor treatment system.
TBOS = Tetra 2-ethylbutylorthosilicate.
TKEBS = Tetrakis (2-ethylbutyl) silane.
VOC = Volatile organic compound.
*Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign $N_2$ gas by anaerobic denitrifying bacteria.

**Table 2.1-1. Central General Services Area (CGSA) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of ft$^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| CGSA | January | 0 | 816 | 0 | 51,729 |
| | February | 0 | 672 | 0 | 178,229 |
| | March | 96 | 744 | 20 | 219,541 |
| | April | 672 | 672 | 1,331 | 293,355 |
| | May | 792 | 788 | 1,600 | 328,022 |
| | June | 696 | 696 | 1,417 | 152,752 |
| Total | | 2,256 | 4,388 | 4,368 | 1,223,628 |

**Table 2.1-2. Central General Services Area Operable Unit volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CGSA-GWTS-E | 1/5/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-E | 2/8/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-E | 3/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-E | 4/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-E | 5/9/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-I | 1/5/11 | 61 | 4.4 | 0.56 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.89 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-I | 4/6/11 | 28 | 1.3 | 1.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| CGSA-GWTS-I | 4/6/11 DUP | 30 | 1.4 | 1.6 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

**Notes:**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.1-2 (Con't.). Analyte detected but not reported in main table.**

| Location | Date | Detection frequency | 1,2-DCE (total) (µg/L) |
|---|---|---|---|
| CGSA-GWTS-E | 1/5/11 | 0 of 18 | – |
| CGSA-GWTS-E | 2/8/11 | 0 of 18 | – |
| CGSA-GWTS-E | 3/7/11 | 0 of 18 | – |
| CGSA-GWTS-E | 4/6/11 | 0 of 18 | – |
| CGSA-GWTS-E | 5/9/11 | 0 of 18 | – |
| CGSA-GWTS-E | 6/6/11 | 0 of 18 | – |
| CGSA-GWTS-I | 1/5/11 | 0 of 18 | – |
| CGSA-GWTS-I | 4/6/11 | 1 of 18 | 1.6 |
| CGSA-GWTS-I | 4/6/11 DUP | 1 of 18 | 1.7 |

**Notes:**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.1-3. Central General Services Area Operable Unit treatment facility sampling and analysis plan.**

| Sample location | Sample identification | Parameter | Frequency |
|---|---|---|---|
| *CGSA GWTS* | | | |
| Influent Port | CGSA-I | VOCs | Quarterly |
| | | pH | Quarterly |
| Effluent Port | CGSA-E | VOCs | Monthly |
| | | pH | Monthly |
| *834 SVTS* | | | |
| Influent Port | CGSA-VI | No Monitoring Requirements | |
| Effluent Port | CGSA-VE | VOCs | Weekly[a] |
| Intermediate GAC | CGSA-VCF4I | VOCs | Weekly[a] |

**Notes:**

[a] **Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.**

**One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.1-4. Central General Services Area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-35A-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | N | Inoperable pump. |
| W-35A-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-35A-02 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-02 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-35A-03 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-03 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-35A-04 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-04 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-35A-05 | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-05 | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-35A-06 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-06 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-35A-07 | PTMW | LTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-07 | PTMW | LTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-35A-08 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 1 | Y | |
| W-35A-08 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 2 | Y | |
| W-35A-08 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 3 | | |
| W-35A-08 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 4 | | |
| W-35A-09 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-09 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-35A-10 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-10 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-35A-11 | PTMW | LTnbs1 | S | CMP | E601:ALL | 2 | N | Unsafe conditions. |
| W-35A-11 | PTMW | LTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-35A-12 | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-12 | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-35A-13 | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-35A-13 | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-35A-14 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 1 | Y | |
| W-35A-14 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 2 | Y | |
| W-35A-14 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 3 | | |
| W-35A-14 | GW | Qt-Tnsc1 | Q | CMP | E601:ALL | 4 | | |
| W-7A | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | N | Inoperable pump. |
| W-7A | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7B | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-7B | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7C | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | N | Inoperable pump. |
| W-7C | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7E | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-7E | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7ES | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-7ES | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-7F | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-7F | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-7G | PTMW | LTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-7G | PTMW | LTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7H | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-7H | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-7I | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-7I | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-7I | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-7I | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-7J | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-7J | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-7K | PTMW | LTnbs1 | S | CMP | E601:ALL | 2 | Y | |

**Table 2.1-4 (Con't.). Central General Services Area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-7K | PTMW | LTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7L | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-7L | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7M | PTMW | LTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-7M | PTMW | LTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7N | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-7N | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7O | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-7O | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-7O | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-7O | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-7P | EW | Qal-Tnbs1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-7P | EW | Qal-Tnbs1 | S | CMP-TF | E601:ALL | 4 | | |
| W-7PS | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-7PS | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7Q | PTMW | Qt-Tnsc1 | S | DIS | E601:ALL | 2 | Y | |
| W-7R | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-7R | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-7R | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-7R | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-7S | PTMW | Qt-Tnsc1 | S | DIS | E601:ALL | 2 | Y | |
| W-7T | PTMW | Qt-Tnsc1 | S | DIS | E601:ALL | 2 | Y | |
| W-843-01 | PTMW | LTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-843-01 | PTMW | LTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-843-02 | PTMW | UTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-843-02 | PTMW | UTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-872-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-872-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-872-02 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | N | Inoperable pump. |
| W-872-02 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | N | Inoperable pump. |
| W-872-02 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-872-02 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-873-01 | PTMW | LTnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-873-01 | PTMW | LTnbs1 | S | CMP | E601:ALL | 4 | | |
| W-873-02 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-873-02 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-873-03 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-873-03 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-873-04 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-873-04 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-873-06 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-873-06 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-873-07 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-873-07 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-873-07 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-873-07 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-875-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-875-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-875-02 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-875-02 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-875-03 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-875-03 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-875-04 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-875-04 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-875-05 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |

**Table 2.1-4 (Con't.). Central General Services Area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-875-05 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-875-06 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-875-06 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-875-07 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-875-07 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-875-07 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-875-07 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-875-08 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-875-08 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-875-08 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-875-08 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-875-09 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-875-09 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-875-09 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-875-09 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-875-10 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-875-10 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | N | Insufficient water. |
| W-875-10 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-875-10 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-875-11 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | N | Insufficient water. |
| W-875-11 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-875-11 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-875-11 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-875-15 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-875-15 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 2 | N | Insufficient water. |
| W-875-15 | EW | Qt-Tnsc1 | S | DIS-TF | E601:ALL | 3 | | |
| W-875-15 | EW | Qt-Tnsc1 | S | CMP-TF | E601:ALL | 4 | | |
| W-876-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-876-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-879-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-879-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-889-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-889-01 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-CGSA-1732 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | N | Dry. |
| W-CGSA-1732 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-CGSA-1733 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-CGSA-1733 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |
| W-CGSA-1735 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-CGSA-1735 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-CGSA-1736 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-CGSA-1736 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-CGSA-1737 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-CGSA-1737 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-CGSA-1739 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 2 | Y | |
| W-CGSA-1739 | PTMW | Qt-Tnsc1 | S | CMP | E601:ALL | 4 | | |

**Notes:**

1) **General Services Area primary COC: VOCs (E601 or E624).**
2) **Wells noted with "*" are sampled as part of the surveillance monitoring performed by the Water Guidance and Monitoring Group (WGMG) for additional constituents and the results are reported in the LLNL Site Annual Environmental Report.**
3) **See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.1-5. Eastern General Services Area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| CDF1 | WS | LTnbs1 | A | WGMG | E502.2:ALL | 1 | Y | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CDF1 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CON1 | WS | LTnbs1 | A | WGMG | E502.2:ALL | 1 | Y | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CON1 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CON2 | WS | LTnbs1 | A | WGMG | E601:ALL | 1 | Y | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 3 | | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| CON2 | WS | LTnbs1 | M | CMP | E601:ALL | 4 | | |
| W-24P-03 | PTMW | Qal-Tnbs1 | A | CMP | E601:ALL | 2 | N | Restricted access. |
| W-25D-01 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | N | Restricted access. |
| W-25D-02 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25M-01 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25M-02 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25M-03 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-01 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-25N-01 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-25N-04 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-05 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-25N-05 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-25N-06 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-07 | GW | Qal-Tnbs1 | Q | PSDMP | E601:ALL | 1 | Y | |
| W-25N-07 | GW | Qal-Tnbs1 | Q | PSDMP | E601:ALL | 2 | Y | |
| W-25N-07 | GW | Qal-Tnbs1 | Q | PSDMP | E601:ALL | 3 | | |
| W-25N-07 | GW | Qal-Tnbs1 | Q | PSDMP | E601:ALL | 4 | | |
| W-25N-08 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |

**Table 2.1-5 (Con't.). Eastern General Services Area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-25N-09 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-10 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 1 | Y | |
| W-25N-10 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 2 | Y | |
| W-25N-10 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 3 | | |
| W-25N-10 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 4 | | |
| W-25N-11 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 1 | Y | |
| W-25N-11 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 2 | Y | |
| W-25N-11 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 3 | | |
| W-25N-11 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 4 | | |
| W-25N-12 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 1 | Y | |
| W-25N-12 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 2 | Y | |
| W-25N-12 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 3 | | |
| W-25N-12 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 4 | | |
| W-25N-13 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 1 | Y | |
| W-25N-13 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 2 | Y | |
| W-25N-13 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 3 | | |
| W-25N-13 | GW | LTnbs1 | Q | PSDMP | E601:ALL | 4 | | |
| W-25N-15 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | N | Inoperable pump. |
| W-25N-18 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-20 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-21 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-22 | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | N | Inoperable pump. |
| W-25N-23 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-25N-23 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-25N-24 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-25N-24 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-25N-25 | PTMW | UTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-26 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-25N-28 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-26R-01 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-26R-01 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-26R-02 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-26R-03 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-26R-03 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-26R-04 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-26R-04 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-26R-05 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-26R-05 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-26R-06 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 2 | Y | |
| W-26R-06 | PTMW | Qal-Tnbs1 | S | PSDMP | E601:ALL | 4 | | |
| W-26R-07 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-26R-08 | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-26R-11 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-26R-11 | PTMW | Qal-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-7D | PTMW | LTnbs1 | A | PSDMP | E601:ALL | 2 | Y | |
| W-7DS | PTMW | Qal-Tnbs1 | A | PSDMP | E601:ALL | 2 | Y | |

**Notes:**

**1) Sampling frequency is described in the Eastern GSA Post Shut-down Monitoring Plan (Holtzapple, 2006).**

**2) General Services Area primary COC: VOCs (E601 or E624).**

**3) Wells noted with "*" are sampled as part of the surveillance monitoring performed by the Water Guidance and Monitoring Group (WGMG) for additional constituents and the results are reported in the LLNL Site Annual Environmental Report.**

**4) See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.1-6. Central General Services Area (CGSA) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| CGSA | January | 0 | 13 | NA | NA | NA | NA |
| | February | 0 | 31 | NA | NA | NA | NA |
| | March | 28 | 35 | NA | NA | NA | NA |
| | April | 290 | 52 | NA | NA | NA | NA |
| | May | 340 | 65 | NA | NA | NA | NA |
| | June | 300 | 24 | NA | NA | NA | NA |
| Total | | 950 | 220 | NA | NA | NA | NA |

**Table 2.2-1. Building 834 (834) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 834 | January | 0 | 0 | 0 | 0 |
| | February | 0 | 294 | 0 | 2,668 |
| | March | 0 | 419 | 0 | 5,225 |
| | April | 384 | 648 | 2,001 | 12,079 |
| | May | 256 | 256 | 845 | 7,955 |
| | June | 0 | 0 | 0 | 0 |
| Total | | 640 | 1,617 | 2,846 | 27,927 |

## Table 2.2-2. Building 834 Operable Unit volatile organic compounds (VOCs) in ground water extraction treatment system influent and effluent.

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 834-GWTS-E[a] | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 834-GWTS-E | 2/14/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 834-GWTS-E | 3/14/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 834-GWTS-E | 4/12/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 834-GWTS-E | 5/10/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 834-GWTS-E[b] | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 834-GWTS-I | 2/14/11 | 1,000 D | 4.2 D | 240 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D |
| 834-GWTS-I | 4/12/11 | 2,000 D | 12 | 650 D | <25 D | <0.5 | <0.5 | <0.5 | <0.5 | 1.1 | <0.5 | 0.72 | <0.5 | <0.5 | 1.4 |
| 834-GWTS-I | 4/12/11 DUP | 2,110 D | 13 | 648 D | 29 | <0.5 | 0.6 | <0.5 | <0.5 | 1.1 | <0.5 | 0.8 | <0.5 | <0.5 | 1.0 |

**Notes:**

[a] No samples collected in January due to GWTS shut down for freeze protection.

[b] No samples collected in June due to GWTS shut down due to compressor problems.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

## Table 2.2-2 (Con't.). Analyte detected but not reported in main table.

| Location | Date | Detection frequency | 1,2-DCE (total) (µg/L) |
|---|---|---|---|
| 834-GWTS-E[a] | – | – | – |
| 834-GWTS-E | 2/14/11 | 0 of 18 | – |
| 834-GWTS-E | 3/14/11 | 0 of 18 | – |
| 834-GWTS-E | 4/12/11 | 0 of 18 | – |
| 834-GWTS-E | 5/10/11 | 0 of 18 | – |
| 834-GWTS-E[b] | – | – | – |
| 834-GWTS-I | 2/14/11 | 1 of 18 | 240 D |
| 834-GWTS-I | 4/12/11 | 1 of 18 | 660 D |
| 834-GWTS-I | 4/12/11 DUP | 1 of 18 | 677 D |

**Notes:**

[a] No samples collected in January due to GWTS shut down for freeze protection.

[b] No samples collected in June due to GWTS shut down due to compressor problems.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

**Table 2.2-3. Building 834 Operable Unit diesel range organic compounds in ground water extraction treatment system influent and effluent.**

| Location | Date | Diesel Range Organics (C12-C24) (µg/L) |
|---|---|---|
| 834-GWTS-E[a] | – | – |
| 834-GWTS-E | 2/14/11 | <200 |
| 834-GWTS-E | 3/14/11 | <200 |
| 834-GWTS-E | 4/12/11 | <200 |
| 834-GWTS-E | 5/10/11 | <200 |
| 834-GWTS-E[b] | – | – |
| 834-GWTS-I | 2/14/11 | <200 |
| 834-GWTS-I | 4/12/11 | <200 |

**Notes:**

[a] No samples collected in January due to GWTS shut down for freeze protection.

[b] No samples collected in June due to GWTS shut down due to compressor problems.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

**Table 2.2-4. Building 834 Operable Unit tetrabutyl orthosilicate/tetrakis (2-ethylbutyl) silane (TBOS/TKEBS) in ground water extraction treatment system influent and effluent.**

| Location | Date | TBOS (µg/L) |
|---|---|---|
| 834-GWTS-E[a] | – | – |
| 834-GWTS-E | 2/14/11 | <10 |
| 834-GWTS-E | 3/14/11 | <10 |
| 834-GWTS-E | 4/12/11 | <10 |
| 834-GWTS-E | 5/10/11 | <10 |
| 834-GWTS-E[b] | – | – |
| 834-GWTS-I | 2/14/11 | 30 |
| 834-GWTS-I | 4/12/11 | <10 |
| 834-GWTS-I | 4/12/11 DUP | <10 |

**Notes:**

[a] **No samples collected in January due to GWTS shut down for freeze protection.**

[b] **No samples collected in June due to GWTS shut down due to compressor problems.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.2-5. Building 834 Operable Unit treatment facility sampling and analysis plan.**

| Sample location | Sample identification | Parameter | Frequency |
|---|---|---|---|
| ***834 GWTS*** | | | |
| **Influent Port** | **834-I** | **VOCs** | **Quarterly** |
| | | **TBOS/TKEBS** | **Quarterly** |
| | | **Diesel** | **Quarterly** |
| | | **pH** | **Quarterly** |
| **Effluent Port** | **834-E** | **VOCs** | **Monthly** |
| | | **TBOS** | **Monthly** |
| | | **Diesel** | **Monthly** |
| | | **pH** | **Monthly** |
| ***834 SVTS*** | | | |
| **Influent Port** | **834-VI** | **No Monitoring Requirements** | |
| **Effluent Port** | **834-VE** | **VOCs** | **Weekly[a]** |
| **Intermediate GAC** | **834-VCF4I** | **VOCs** | **Weekly[a]** |

**Notes:**

[a] **Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.**

**One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.2-6. Building 834 Operable Unit ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-834-1709 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-1709 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-1709 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-1709 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-1711 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-1711 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-834-1711 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-834-1711 | PTMW | Tps-Tnsc2 | A | CMP | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-1824 | PTMW | Tpsg | A | DIS | E200.7:FE | 1 | Y | |
| W-834-1824 | PTMW | Tpsg | A | DIS | E200.8:MN | 1 | Y | |
| W-834-1824 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-1824 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-1824 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-1824 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-1825 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-1825 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-834-1825 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-1825 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-1833 | PTMW | Tpsg | A | DIS | E200.7:FE | 1 | Y | |
| W-834-1833 | PTMW | Tpsg | A | DIS | E200.8:MN | 1 | Y | |
| W-834-1833 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-1833 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-1833 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-1833 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-2001 | EW | Tps-Tnsc2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-2001 | EW | Tps-Tnsc2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-2001 | EW | Tps-Tnsc2 | S | CMP-TF | E601:ALL | 3 | | |
| W-834-2001 | EW | Tps-Tnsc2 | S | DIS-TF | E624:ALL | 2 | Y | |
| W-834-2001 | EW | Tps-Tnsc2 | S | DIS-TF | EM8015:DIESEL | 1 | Y | |
| W-834-2001 | EW | Tps-Tnsc2 | S | DIS-TF | EM8015:DIESEL | 3 | | |
| W-834-2001 | EW | Tps-Tnsc2 | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-2001 | EW | Tps-Tnsc2 | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-2113 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-2113 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-2113 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-2113 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-2117 | PTMW | Tpsg | A | DIS | E200.7:FE | 1 | Y | |
| W-834-2117 | PTMW | Tpsg | A | DIS | E200.8:MN | 1 | Y | |
| W-834-2117 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-2117 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-2117 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-2117 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | Y | |
| W-834-2118 | PTMW | Tpsg | A | DIS | E200.7:FE | 1 | Y | |
| W-834-2118 | PTMW | Tpsg | A | DIS | E200.8:MN | 1 | Y | |
| W-834-2118 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-2118 | PTMW | Tpsg | S | DIS | E300.0:PERC | 1 | Y | |
| W-834-2118 | PTMW | Tpsg | S | DIS | E300.0:PERC | 3 | | |
| W-834-2118 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-2118 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-2118 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | Y | |
| W-834-2119 | PTMW | Tps-Tnsc2 | A | DIS | E200.7:FE | 1 | Y | |
| W-834-2119 | PTMW | Tps-Tnsc2 | A | DIS | E200.8:MN | 1 | Y | |
| W-834-2119 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-2119 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-834-2119 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |

**Table 2.2-6 (Con't.). Building 834 Operable Unit ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-834-2119 | PTMW | Tps-Tnsc2 | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-A1 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-A1 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-834-A1 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-834-A1 | PTMW | Tps-Tnsc2 | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-A2 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-A2 | PTMW | Tpsg | A | DIS | E300.0:PERC | 1 | N | Insufficient water. |
| W-834-A2 | PTMW | Tpsg | S | DIS | E300.0:PERC | 3 | | |
| W-834-A2 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-834-A2 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-A2 | PTMW | Tpsg | O | DIS | EM8015:DRANGE | 1 | N | Insufficient water. |
| W-834-A2 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-B2 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-B2 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | N | Insufficient water. |
| W-834-B2 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-B2 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-B2 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-B2 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-B3 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-B3 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-B3 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-B3 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-B3 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-B3 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-B4 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-B4 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-B4 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-B4 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-C2 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-C2 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-834-C2 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-C2 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-C4 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-C4 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-C4 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-C4 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-C5 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-C5 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-C5 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-C5 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-D2 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-D2 | PTMW | LTnbs1 | A | CMP | E601:ALL | 1 | N | Dry. |
| W-834-D2 | PTMW | LTnbs1 | A | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-D3 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-D3 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-D3 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-D3 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-D4 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-D4 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-D4 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-D4 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-D4 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-D4 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-D5 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-D5 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |

**Table 2.2-6 (Con't.). Building 834 Operable Unit ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-834-D5 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-D5 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-D6 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-D6 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-D6 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-D6 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-D6 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-D6 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-D7 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-D7 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-D7 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-D7 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-D7 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-D7 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-D9A | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-D9A | PTMW | Tnbs2 | A | CMP | E601:ALL | 1 | N | Dry. |
| W-834-D9A | PTMW | Tnbs2 | A | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-D10 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-D10 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-834-D10 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-834-D10 | PTMW | Tps-Tnsc2 | O | DIS | EM8015:DRANGE | 1 | N | Insufficient water. |
| W-834-D10 | PTMW | Tps-Tnsc2 | A | CMP | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-D11 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-D11 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-834-D11 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-D11 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-D12 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-D12 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-D12 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-D12 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-D12 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-D12 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-D13 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-D13 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-D13 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-D13 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-D13 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-D13 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-D14 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-D14 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-D14 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-D14 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-D15 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-D15 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-D15 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-D15 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-D16 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-D16 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-D16 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-D16 | PTMW | Tpsg | O | DIS | EM8015:DRANGE | 1 | N | Dry. |
| W-834-D16 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-D17 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-D17 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-D17 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-D17 | PTMW | Tpsg | O | DIS | EM8015:DRANGE | 1 | N | Dry. |

**Table 2.2-6 (Con't.). Building 834 Operable Unit ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-834-D17 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-D18 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-D18 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-D18 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-D18 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-G3 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-G3 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Dry. |
| W-834-G3 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-H2 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-H2 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-H2 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-H2 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-J1 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-J1 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-J1 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-J1 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-J1 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-J1 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-J2 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-J2 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-J2 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-J2 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | Y | |
| W-834-J3 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-J3 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-J3 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-J3 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-K1A | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-K1A | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-K1A | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-K1A | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-M1 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-M1 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-M1 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-M1 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-M2 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-M2 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-M2 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-M2 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-S1 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-834-S1 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-834-S1 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-S1 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-S1 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | Y | |
| W-834-S1 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-S10 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-S10 | PTMW | Tpsg | S | CMP | E624:ALL | 1 | N | Dry. |
| W-834-S10 | PTMW | Tpsg | S | CMP | E624:ALL | 3 | | |
| W-834-S10 | PTMW | Tpsg | A | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-S12A | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-S12A | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | N | Insufficient water. |
| W-834-S12A | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-S12A | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-S12A | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-S12A | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-S13 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | N | Insufficient water. |

**Table 2.2-6 (Con't.). Building 834 Operable Unit ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-834-S13 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | N | Insufficient water. |
| W-834-S13 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-834-S13 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-834-S13 | EW | Tpsg | A | CMP-TF | TBOS:ALL | 1 | N | Insufficient water. |
| W-834-S13 | EW | Tpsg | A | DIS-TF | TBOS:ALL | 3 | | |
| W-834-S4 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-S4 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-S4 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-S4 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | Y | |
| W-834-S5 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-S5 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-S5 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-S5 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-S6 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-834-S6 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-834-S6 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-S6 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-S7 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-S7 | PTMW | Tpsg | S | DIS | E300.0:PERC | 1 | N | Dry. |
| W-834-S7 | PTMW | Tpsg | S | DIS | E300.0:PERC | 3 | | |
| W-834-S7 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-S7 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-S7 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-S8 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-S8 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-834-S8 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-834-S8 | PTMW | Tps-Tnsc2 | O | DIS | EM8015:DRANGE | 1 | Y | |
| W-834-S8 | PTMW | Tps-Tnsc2 | O | CMP | TBOS:ALL | 1 | Y | |
| W-834-S9 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-S9 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-834-S9 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-834-S9 | PTMW | Tps-Tnsc2 | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-T1 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-834-T1 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| W-834-T1 | GW | LTnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| W-834-T1 | GW | LTnbs1 | Q | CMP | E601:ALL | 2 | Y | |
| W-834-T1 | GW | LTnbs1 | Q | CMP | E601:ALL | 3 | | |
| W-834-T1 | GW | LTnbs1 | Q | CMP | E601:ALL | 4 | | |
| W-834-T1 | GW | LTnbs1 | S | CMP | TBOS:ALL | 1 | Y | |
| W-834-T1 | GW | LTnbs1 | S | CMP | TBOS:ALL | 3 | | |
| W-834-T11 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-T11 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-T11 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T11 | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-T2 | PTMW | Tpsg | A | DIS | E200.7:FE | 1 | Y | |
| W-834-T2 | PTMW | Tpsg | A | DIS | E200.8:MN | 1 | Y | |
| W-834-T2 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-T2 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-T2 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T2 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | Y | |
| W-834-T2A | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-T2A | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-T2A | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T2A | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-T2B | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |

**Table 2.2-6 (Con't.). Building 834 Operable Unit ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-834-T2B | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-T2B | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T2B | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-T2C | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-T2C | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-T2C | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T2C | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-T2D | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-T2D | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-834-T2D | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T2D | PTMW | Tpsg | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-T3 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-834-T3 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| W-834-T3 | GW | LTnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| W-834-T3 | GW | LTnbs1 | Q | CMP | E601:ALL | 2 | Y | |
| W-834-T3 | GW | LTnbs1 | Q | CMP | E601:ALL | 3 | | |
| W-834-T3 | GW | LTnbs1 | Q | CMP | E601:ALL | 4 | | |
| W-834-T3 | GW | LTnbs1 | S | CMP | TBOS:ALL | 1 | Y | |
| W-834-T3 | GW | LTnbs1 | S | CMP | TBOS:ALL | 3 | | |
| W-834-T5 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-T5 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-834-T5 | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-834-T5 | PTMW | Tps-Tnsc2 | E | CMP | TBOS:ALL | 1 | | To be sampled in 2012. |
| W-834-T7A | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-T7A | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-T7A | PTMW | Tps-Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-834-T7A | PTMW | Tps-Tnsc2 | O | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-T8A | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-T8A | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-T8A | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T8A | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-T9 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-834-T9 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-834-T9 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-834-T9 | PTMW | Tpsg | O | CMP | TBOS:ALL | 1 | N | Dry. |
| W-834-U1 | PTMW | Tps-Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-834-U1 | PTMW | Tps-Tnsc2 | S | CMP | E624:ALL | 1 | Y | |
| W-834-U1 | PTMW | Tps-Tnsc2 | S | CMP | E624:ALL | 3 | | |
| W-834-U1 | PTMW | Tps-Tnsc2 | A | DIS | EM8015:DIESEL | 1 | Y | |
| W-834-U1 | PTMW | Tps-Tnsc2 | A | CMP | TBOS:ALL | 1 | Y | |

**Notes:**

1) **Building 834 primary COC: VOCs (E601).**
2) **Building 834 secondary COC: Nitrate (E300.0:NO3).**
3) **Building 834 secondary COC: TBOS/TKEBS.**
4) **A limited set of wells in the Core area will be sampled for diesel (EM8015) due to an underground storage tank.**
5) **A limited set of wells will be sampled for perchlorate semiannually.**
6) **Well W-834-D5 is hooked up to the Building 834 treatment system but is not currently being used as an extraction well.**
7) **See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.2-7. Building 834 (834) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 834 | January | 0 | 0 | NA | 0 | NA | 0 |
| | February | 0 | 26 | NA | 0.58 | NA | 0.061 |
| | March | 0 | 38 | NA | 1.3 | NA | 0.052 |
| | April | 1,000 | 180 | NA | 3.5 | NA | 0.20 |
| | May | 430 | 140 | NA | 2.3 | NA | 0.29 |
| | June | 0 | 0 | NA | 0 | NA | 0 |
| Total | | 1,500 | 390 | NA | 7.7 | NA | 0.60 |

**Table 2.3-1. Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| BC6-10 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| BC6-10 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| BC6-10 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| BC6-10 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| BC6-10 | PTMW | LTnbs1 | S | CMP | E906:ALL | 1 | Y | |
| BC6-10 | PTMW | LTnbs1 | S | CMP | E906:ALL | 3 | | |
| BC6-13 | PTMW | Qt-Tnbs1 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| BC6-13 | PTMW | Qt-Tnbs1 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| BC6-13 | PTMW | Qt-Tnbs1 | E | CMP | E601:ALL | 1 | | To be sampled in 2012. |
| BC6-13 | PTMW | Qt-Tnbs1 | E | CMP | E906:ALL | 1 | | To be sampled in 2012. |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | Q | WGMG | E624:ALL | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | Q | WGMG | E624:ALL | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | Q | WGMG | E624:ALL | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW1 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | Q | WGMG | E502.2:ALL | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | Q | WGMG | E502.2:ALL | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | Q | WGMG | E502.2:ALL | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW2 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW3 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E601:ALL | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 1 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 2 | Y | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 3 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| CARNRW4 | WS | Qt-Tnbs1 | M | CMP | E906:ALL | 4 | | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E300.0:NO3 | 3 | | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E300.0:PERC | 1 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E300.0:PERC | 2 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E300.0:PERC | 3 | | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E8260:ALL | 1 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E8260:ALL | 2 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E8260:ALL | 3 | | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E906:ALL | 1 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E906:ALL | 2 | Y | |
| EP6-06 | DMW | LTnbs1 | Q | WGMG | E906:ALL | 3 | | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| EP6-07 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| EP6-07 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| EP6-07 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| EP6-07 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| EP6-07 | PTMW | LTnbs1 | S | CMP | E906:ALL | 1 | Y | |
| EP6-07 | PTMW | LTnbs1 | S | CMP | E906:ALL | 3 | | |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 1 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 2 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 3 | | |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 1 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 2 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 3 | | |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 1 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 2 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 3 | | |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 1 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 2 | N | Dry. |
| EP6-08 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 3 | | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 3 | | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 1 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 2 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 3 | | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 1 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 2 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 3 | | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 1 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 2 | Y | |
| EP6-09 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 3 | | |
| K6-01 | DMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-01 | DMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-01 | DMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-01 | DMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-01 | DMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-01 | DMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 3 | | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 3 | | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 1 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 2 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 3 | | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 1 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 2 | Y | |
| K6-01S | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 3 | | |
| K6-03 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-03 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-03 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-03 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-03 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-03 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-04 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K6-04 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-04 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-04 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-04 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-04 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-14 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-14 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-14 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-14 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-14 | PTMW | LTnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-14 | PTMW | LTnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-15 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| K6-15 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | N | Dry. |
| K6-15 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | N | Dry. |
| K6-15 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-15 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | N | Dry. |
| K6-15 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-16 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-16 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-16 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-16 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-16 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-16 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-17 | GW | Qt-Tnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| K6-17 | GW | Qt-Tnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| K6-17 | GW | Qt-Tnbs1 | S | CMP | E300.0:PERC | 1 | Y | |
| K6-17 | GW | Qt-Tnbs1 | S | CMP | E300.0:PERC | 3 | | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 2 | Y | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 3 | | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 4 | | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 1 | Y | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 2 | Y | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 3 | | |
| K6-17 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 4 | | |
| K6-18 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-18 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-18 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-18 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-18 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-18 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 3 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 4 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 3 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 4 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 1 | Y | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 2 | Y | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 3 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 4 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 1 | Y | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 2 | Y | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 3 | | |
| K6-19 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 4 | | |
| K6-21 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| K6-21 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | N | Dry. |
| K6-21 | PTMW | LTnbs1 | A | CMP | E601:ALL | 1 | N | Dry. |
| K6-21 | PTMW | LTnbs1 | A | CMP | E906:ALL | 1 | N | Dry. |
| K6-22 | GW | Qt-Tnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| K6-22 | GW | Qt-Tnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| K6-22 | GW | Qt-Tnbs1 | S | CMP | E300.0:PERC | 1 | Y | |
| K6-22 | GW | Qt-Tnbs1 | S | CMP | E300.0:PERC | 3 | | |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 2 | N | Dry. |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 3 | | |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 4 | | |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 1 | Y | |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 2 | N | Dry. |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 3 | | |
| K6-22 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 4 | | |
| K6-23 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-23 | PTMW | Qt-Tnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| K6-23 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-23 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-23 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-23 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-23 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-24 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-24 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-24 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-24 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-24 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-24 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-25 | PTMW | Tmss | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-25 | PTMW | Tmss | A | CMP | E300.0:PERC | 1 | Y | |
| K6-25 | PTMW | Tmss | S | CMP | E601:ALL | 1 | Y | |
| K6-25 | PTMW | Tmss | S | CMP | E601:ALL | 3 | | |
| K6-25 | PTMW | Tmss | S | CMP | E906:ALL | 1 | Y | |
| K6-25 | PTMW | Tmss | S | CMP | E906:ALL | 3 | | |
| K6-26 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-26 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-26 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-26 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-26 | PTMW | LTnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-26 | PTMW | LTnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-27 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-27 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-27 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-27 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-27 | PTMW | LTnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-27 | PTMW | LTnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-32 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| K6-32 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | N | Dry. |
| K6-32 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | N | Dry. |
| K6-32 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-32 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | N | Dry. |
| K6-32 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K6-33 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-33 | PTMW | Qt-Tnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-33 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-33 | PTMW | Qt-Tnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-33 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-33 | PTMW | Qt-Tnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-34 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| K6-34 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| K6-34 | GW | LTnbs1 | S | CMP | E300.0:PERC | 1 | Y | |
| K6-34 | GW | LTnbs1 | S | CMP | E300.0:PERC | 3 | | |
| K6-34 | GW | LTnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| K6-34 | GW | LTnbs1 | Q | CMP | E601:ALL | 2 | Y | |
| K6-34 | GW | LTnbs1 | Q | CMP | E601:ALL | 3 | | |
| K6-34 | GW | LTnbs1 | Q | CMP | E601:ALL | 4 | | |
| K6-34 | GW | LTnbs1 | Q | CMP | E906:ALL | 1 | Y | |
| K6-34 | GW | LTnbs1 | Q | CMP | E906:ALL | 2 | Y | |
| K6-34 | GW | LTnbs1 | Q | CMP | E906:ALL | 3 | | |
| K6-34 | GW | LTnbs1 | Q | CMP | E906:ALL | 4 | | |
| K6-35 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| K6-35 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| K6-35 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| K6-35 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| K6-35 | PTMW | LTnbs1 | S | CMP | E906:ALL | 1 | Y | |
| K6-35 | PTMW | LTnbs1 | S | CMP | E906:ALL | 3 | | |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 1 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 2 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:NO3 | 3 | | |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 1 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 2 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E300.0:PERC | 3 | | |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 1 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 2 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E8260:ALL | 3 | | |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 1 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 2 | N | Dry. |
| K6-36 | DMW | Qt-Tnbs1 | Q | WGMG | E906:ALL | 3 | | |
| W-33C-01 | PTMW | Tts | A | CMP | E300.0:NO3 | 1 | Y | |
| W-33C-01 | PTMW | Tts | A | CMP | E300.0:PERC | 1 | Y | |
| W-33C-01 | PTMW | Tts | S | CMP | E601:ALL | 1 | Y | |
| W-33C-01 | PTMW | Tts | S | CMP | E601:ALL | 3 | | |
| W-33C-01 | PTMW | Tts | S | CMP | E906:ALL | 1 | Y | |
| W-33C-01 | PTMW | Tts | S | CMP | E906:ALL | 3 | | |
| W-34-01 | MWB | UTnbs1 | A | DIS | E300.0:NO3 | 1 | Y | |
| W-34-01 | MWB | UTnbs1 | A | DIS | E300.0:PERC | 1 | Y | |
| W-34-01 | MWB | UTnbs1 | A | DIS | E601:ALL | 1 | Y | |
| W-34-01 | MWB | UTnbs1 | A | DIS | E906:ALL | 1 | Y | |
| W-34-02 | MWB | LTnbs1 | A | DIS | E300.0:NO3 | 1 | Y | |
| W-34-02 | MWB | LTnbs1 | A | DIS | E300.0:PERC | 1 | Y | |
| W-34-02 | MWB | LTnbs1 | A | DIS | E601:ALL | 1 | Y | |
| W-34-02 | MWB | LTnbs1 | A | DIS | E906:ALL | 1 | Y | |
| SPRING15 | SPR | Qt-Tnbs1 | O | CMP | E300.0:NO3 | 1 | N | Dry. |
| SPRING15 | SPR | Qt-Tnbs1 | O | CMP | E300.0:PERC | 1 | N | Dry. |
| SPRING15 | SPR | Qt-Tnbs1 | O | CMP | E601:ALL | 1 | N | Dry. |
| SPRING15 | SPR | Qt-Tnbs1 | O | CMP | E906:ALL | 1 | N | Dry. |
| W-PIT6-1819 | GW | Qt-Tnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |

**Table 2.3-1 (Con't.). Pit 6 Landfill Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-PIT6-1819 | GW | Qt-Tnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | S | CMP | E300.0:PERC | 1 | Y | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | S | CMP | E300.0:PERC | 3 | | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 2 | Y | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 3 | | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E601:ALL | 4 | | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 1 | Y | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 2 | Y | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 3 | | |
| W-PIT6-1819 | GW | Qt-Tnbs1 | Q | CMP | E906:ALL | 4 | | |

**Notes:**

1) **Detection Monitoring conducted per the Pit 6 Post-Closure Plan.**
2) **Pit 6 Landfill primary COC: VOCs (E601).**
3) **Pit 6 Landfill primary COC: tritium (E906).**
4) **Pit 6 Landfill secondary COC: nitrate (E300:NO3).**
5) **Pit 6 Landfill secondary COC: perchlorate (E300.0:PERC).**
6) **Wells noted with "*" are sampled as part of the surveillance monitoring performed by the Water Guidance and Monitoring Group (WGMG) for additional constituents and the results are reported in the LLNL Site Annual Environmental Report.**
7) **See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.4-1. Building 815-Source (815-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of ft$^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 815-SRC | January | NA | 818 | NA | 40,031 |
| | February | NA | 542 | NA | 31,792 |
| | March | NA | 529 | NA | 31,544 |
| | April | NA | 669 | NA | 42,988 |
| | May | NA | 789 | NA | 58,989 |
| | June | NA | 692 | NA | 55,571 |
| Total | | NA | 4,039 | NA | 260,915 |

**Table 2.4-2. Building 815-Proximal (815-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of ft$^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 815-PRX | January | NA | 0 | NA | 0 |
| | February | NA | 0 | NA | 0 |
| | March | NA | 551 | NA | 45,029 |
| | April | NA | 567 | NA | 89,332 |
| | May | NA | 705 | NA | 103,074 |
| | June | NA | 702 | NA | 102,074 |
| Total | | NA | 2,525 | NA | 339,509 |

**Table 2.4-3. Building 815-Distal Site Boundary (815-DSB) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 815-DSB | January | NA | 830 | NA | 120,601 |
| | February | NA | 673 | NA | 130,388 |
| | March | NA | 743 | NA | 149,331 |
| | April | NA | 678 | NA | 136,115 |
| | May | NA | 802 | NA | 158,670 |
| | June | NA | 702 | NA | 136,878 |
| Total | | NA | 4,428 | NA | 831,983 |

**Table 2.4-4. Building 817-Source (817-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 817-SRC | January | NA | 0 | NA | 0 |
| | February | NA | 1 | NA | 38 |
| | March | NA | 1 | NA | 13 |
| | April | NA | 0 | NA | 0 |
| | May | NA | 3 | NA | 209 |
| | June | NA | 7 | NA | 414 |
| Total | | NA | 12 | NA | 674 |

**Table 2.4-5. Building 817-Proximal (817-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 817-PRX | January | NA | 829 | NA | 51,927 |
| | February | NA | 674 | NA | 42,254 |
| | March | NA | 493 | NA | 37,618 |
| | April | NA | 678 | NA | 46,412 |
| | May | NA | 801 | NA | 43,919 |
| | June | NA | 530 | NA | 25,588 |
| Total | | NA | 4,005 | NA | 247,718 |

**Table 2.4-6. Building 829-Source (829-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 829-SRC | January | NA | 0 | NA | 0 |
| | February | NA | 0 | NA | 0 |
| | March | NA | 0 | NA | 0 |
| | April | NA | 0 | NA | 0 |
| | May | NA | 0 | NA | 0 |
| | June | NA | 217 | NA | 0 |
| Total | | NA | 217 | NA | 0 |

**Table 2.4-7. High Explosives Process Area Operable Unit volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Building 815-Distal Site Boundry*** | | | | | | | | | | | | | | | |
| 815-DSB-GWTS-E | 1/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-DSB-GWTS-E | 2/8/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-DSB-GWTS-E | 3/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-DSB-GWTS-E | 4/5/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-DSB-GWTS-E | 5/9/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-DSB-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-DSB-GWTS-I | 1/4/11 | 12 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-DSB-GWTS-I | 5/9/11 | 12 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| ***Building 815-Proximal***[a] | | | | | | | | | | | | | | | |
| 815-PRX-GWTS-E | 3/8/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-E | 3/15/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-E | 4/11/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-E | 5/9/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-I | 3/8/11 | 27 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-I | 3/15/11 | 28 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-I | 4/11/11 | 26 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-PRX-GWTS-I | 4/11/11 DUP | 25 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| ***Building 815-Source*** | | | | | | | | | | | | | | | |
| 815-SRC-GWTS-E | 1/3/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-E | 2/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-E | 3/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-E | 4/5/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-E | 5/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-I | 1/4/11 | 5.7 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.63 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-I | 4/5/11 | 3.7 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.56 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 815-SRC-GWTS-I | 4/5/11 DUP | 3.6 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

**Table 2.4-7 (Con't.). High Explosives Process Area Operable Unit volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Building 817-Proximal* | | | | | | | | | | | | | | | |
| 817-PRX-GWTS-E | 1/3/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-E | 2/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-E | 3/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-E | 4/5/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-E | 5/10/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-I | 1/4/11 | 9.1 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-I | 4/5/11 | 12 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-PRX-GWTS-I | 4/5/11 DUP | 9.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| *Building 817-Source*[b] | | | | | | | | | | | | | | | |
| 817-SRC-GWTS-E | 2/14/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-SRC-GWTS-E | 3/8/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-SRC-GWTS-E | 5/18/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-SRC-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-SRC-GWTS-I | 2/14/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 817-SRC-GWTS-I | 5/18/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| *Building 829-Source*[c] | | | | | | | | | | | | | | | |

**Notes:**

[a] **No compliance monitoring conducted in January and February due to inoperative extraction wells; additional samples collected in March as part of restart procedures.**

[b] **No samples collected in January due to GWTS shut down for freeze protection; GWTS offline in April due to nonfunctional totalizer.**

[c] **No compliance monitoring conducted; system offline for construction and testing.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

Table 2.4-7 (Con't.). Analyte detected but not reported in main table.

| Location | Date | Detection frequency |
|---|---|---|
| ***Building 815-Distal Site Boundry*** | | |
| 815-DSB-GWTS-E | 1/4/11 | 0 of 18 |
| 815-DSB-GWTS-E | 2/8/11 | 0 of 18 |
| 815-DSB-GWTS-E | 3/7/11 | 0 of 18 |
| 815-DSB-GWTS-E | 4/5/11 | 0 of 18 |
| 815-DSB-GWTS-E | 5/9/11 | 0 of 18 |
| 815-DSB-GWTS-E | 6/6/11 | 0 of 18 |
| 815-DSB-GWTS-I | 1/4/11 | 0 of 18 |
| 815-DSB-GWTS-I | 5/9/11 | 0 of 18 |
| ***Building 815-Proximal***[a] | | |
| 815-PRX-GWTS-E | 3/8/11 | 0 of 18 |
| 815-PRX-GWTS-E | 3/15/11 | 0 of 18 |
| 815-PRX-GWTS-E | 4/11/11 | 0 of 18 |
| 815-PRX-GWTS-E | 5/9/11 | 0 of 18 |
| 815-PRX-GWTS-E | 6/6/11 | 0 of 18 |
| 815-PRX-GWTS-I | 3/8/11 | 0 of 18 |
| 815-PRX-GWTS-I | 3/15/11 | 0 of 18 |
| 815-PRX-GWTS-I | 4/11/11 | 0 of 18 |
| 815-PRX-GWTS-I | 4/11/11 DUP | 0 of 18 |
| ***Building 815-Source*** | | |
| 815-SRC-GWTS-E | 1/3/11 | 0 of 18 |
| 815-SRC-GWTS-E | 2/7/11 | 0 of 18 |
| 815-SRC-GWTS-E | 3/7/11 | 0 of 18 |
| 815-SRC-GWTS-E | 4/5/11 | 0 of 18 |
| 815-SRC-GWTS-E | 5/4/11 | 0 of 18 |
| 815-SRC-GWTS-E | 6/6/11 | 0 of 18 |
| 815-SRC-GWTS-I | 1/4/11 | 0 of 18 |
| 815-SRC-GWTS-I | 4/5/11 | 0 of 18 |
| 815-SRC-GWTS-I | 4/5/11 DUP | 0 of 18 |
| ***Building 817-Proximal*** | | 0 of 18 |
| 817-PRX-GWTS-E | 1/3/11 | 0 of 18 |
| 817-PRX-GWTS-E | 2/7/11 | 0 of 18 |
| 817-PRX-GWTS-E | 3/7/11 | 0 of 18 |
| 817-PRX-GWTS-E | 4/5/11 | 0 of 18 |
| 817-PRX-GWTS-E | 5/10/11 | 0 of 18 |
| 817-PRX-GWTS-E | 6/6/11 | 0 of 18 |
| 817-PRX-GWTS-I | 1/4/11 | 0 of 18 |
| 817-PRX-GWTS-I | 4/5/11 | 0 of 18 |
| 817-PRX-GWTS-I | 4/5/11 DUP | 0 of 18 |
| ***Building 817-Source***[b] | | |
| 817-SRC-GWTS-E | 2/14/11 | 0 of 18 |
| 817-SRC-GWTS-E | 3/8/11 | 0 of 18 |
| 817-SRC-GWTS-E | 5/18/11 | 0 of 18 |
| 817-SRC-GWTS-E | 6/6/11 | 0 of 18 |
| 817-SRC-GWTS-I | 2/14/11 | 0 of 18 |
| 817-SRC-GWTS-I | 5/18/11 | 0 of 18 |

**Table 2.4-7 (Con't.). Analyte detected but not reported in main table.**

| Location | Date | Detection frequency |
|---|---|---|
| ***Building 829-Source***[c] | | |

**Notes:**

[a] **No compliance monitoring conducted in January and February due to inoperative extraction wells; additional samples collected in March as part of restart procedures.**

[b] **No samples collected in January due to GWTS shut down for freeze protection; GWTS offline in April due to nonfunctional totalizer.**

[c] **No compliance monitoring conducted; system offline for construction and testing.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.4-8. High Explosives Process Area Operable Unit nitrate and perchlorate in ground water treatment system influent and effluent.**

| Location | Date | Nitrate (as NO3) (mg/L) | Perchlorate (µg/L) |
|---|---|---|---|
| ***Building 815-Distal Site Boundry***[a] | | | |
| ***Building 815-Proximal***[b] | | | |
| **815-PRX-GWTS-E** | **3/8/11** | **NR** | **<4** |
| **815-PRX-GWTS-E** | **3/15/11** | **NR** | **<4** |
| **815-PRX-GWTS-E** | **4/11/11** | **NR** | **<4** |
| **815-PRX-GWTS-E** | **5/9/11** | **NR** | **<4** |
| **815-PRX-GWTS-E** | **6/6/11** | **NR** | **<4** |
| **815-PRX-GWTS-I** | **3/8/11** | **NR** | **7.2** |
| **815-PRX-GWTS-I** | **3/15/11** | **NR** | **6.6** |
| **815-PRX-GWTS-I** | **4/11/11** | **NR** | **6.5** |
| **815-PRX-GWTS-I** | **04/11/11 DUP** | **NR** | **7.2** |
| ***Building 815-Source*** | | | |
| **815-SRC-GWTS-E** | **1/3/11** | **NR** | **<4** |
| **815-SRC-GWTS-E** | **2/7/11** | **NR** | **<4** |
| **815-SRC-GWTS-E** | **3/7/11** | **NR** | **<4** |
| **815-SRC-GWTS-E** | **4/5/11** | **NR** | **<4** |
| **815-SRC-GWTS-E** | **5/4/11** | **NR** | **<4** |
| **815-SRC-GWTS-E** | **6/6/11** | **NR** | **<4** |
| **815-SRC-GWTS-I** | **1/4/11** | **NR** | **8.1** |
| **815-SRC-GWTS-I** | **4/5/11** | **NR** | **4.7** |
| **815-SRC-GWTS-I** | **4/5/11 DUP** | **NR** | **6.8** |
| ***Building 817-Proximal*** | | | |
| **817-PRX-GWTS-E** | **1/3/11** | **NR** | **<4** |
| **817-PRX-GWTS-E** | **2/7/11** | **NR** | **<4** |
| **817-PRX-GWTS-E** | **3/7/11** | **NR** | **<4** |
| **817-PRX-GWTS-E** | **4/5/11** | **NR** | **<4** |
| **817-PRX-GWTS-E** | **5/10/11** | **NR** | **<4** |
| **817-PRX-GWTS-E** | **6/6/11** | **NR** | **<4** |
| **817-PRX-GWTS-I** | **1/4/11** | **NR** | **22 D** |
| **817-PRX-GWTS-I** | **4/5/11** | **NR** | **22 D** |
| **817-PRX-GWTS-I** | **4/5/11 DUP** | **NR** | **24 D** |

**Table 2.4-8 (Con't.). High Explosives Process Area Operable Unit nitrate and perchlorate in ground water treatment system influent and effluent.**

| Location | Date | Nitrate (as NO3) (mg/L) | Perchlorate (µg/L) |
|---|---|---|---|
| ***Building 817-Source***[c] | | | |
| **817-SRC-GWTS-E** | **2/14/11** | **NR** | **<4** |
| **817-SRC-GWTS-E** | **3/8/11** | **NR** | **<4** |
| **817-SRC-GWTS-E** | **5/18/11** | **NR** | **<4** |
| **817-SRC-GWTS-E** | **6/6/11** | **NR** | **<4** |
| **817-SRC-GWTS-I** | **2/14/11** | **NR** | **25 D** |
| **817-SRC-GWTS-I** | **5/18/11** | **NR** | **29 D** |
| ***Building 829-Source***[d] | | | |

**Notes:**

[a] **No nitrate or perchlorate monitoring required.**

[b] **No compliance monitoring conducted January and February due to inoperative extraction wells; additional samples collected in March as part of restart procedures.**

[c] **No samples collected in January due to GWTS shut down for freeze protection; GWTS offline in April due to nonfunctional totalizer.**

[d] **No compliance monitoring conducted; system offline for construction and testing.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.4-9. High Explosives Process Area Operable Unit high explosive compounds in ground water treatment system influent and effluent.**

| Location | Date | 1,3,5-TNB (µg/L) | 1,3-DNB (µg/L) | TNT (µg/L) | 2,4-DNT (µg/L) | 2,6-DNT (µg/L) | 2-Amino-4,6- DNT (µg/L) | 2-NT (µg/L) | 3-NT (µg/L) | 4-Amino-2,6- DNT (µg/L) | 4-NT (µg/L) | HMX (µg/L) | NB (µg/L) | RDX (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Building 815-Distal Site Boundry***[a] | | | | | | | | | | | | | | |
| ***Building 815-Proximal***[b] | | | | | | | | | | | | | | |
| 815-PRX-GWTS-E | 3/8/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 815-PRX-GWTS-E | 4/11/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 L | <2 | <1 |
| ***Building 815-Source*** | | | | | | | | | | | | | | |
| 815-SRC-GWTS-E[c] | 1/3/11 | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <1.1 D | <2.3 D | <1.1 D |
| 815-SRC-GWTS-E | 2/7/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 815-SRC-GWTS-E | 3/7/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 815-SRC-GWTS-E[c] | 4/5/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 815-SRC-GWTS-E | 5/4/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 815-SRC-GWTS-E | 6/6/11 | <2 | <2 L | <2 L | <2 | <2 | <2 L | <2 | <2 | <2 | <2 | <1 L | <2 L | <1 |
| 815-SRC-GWTS-I[c] | 1/4/11 | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <1.2 D | <2.4 D | 58 D |
| 815-SRC-GWTS-I[c] | 4/5/11 | <2.6 D | <2.6 D | <2.6 D | <2.6 D | <2.6 D | <2.6 D | <2.6 D | <2.6 D | <2.6 D | <2.6 D | <1.3 D | <2.6 D | 48 D |
| 815-SRC-GWTS-I | 4/5/11 DUP | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 5.5 | <2 | 7.2 | <2 | 47 |
| ***Building 817-Proximal*** | | | | | | | | | | | | | | |
| 817-PRX-GWTS-E[c] | 1/3/11 | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <1.2 D | <2.4 D | <1.2 D |
| 817-PRX-GWTS-E | 2/7/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 817-PRX-GWTS-E | 3/7/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 817-PRX-GWTS-E | 4/5/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 817-PRX-GWTS-E | 5/10/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 817-PRX-GWTS-E | 6/6/11 | <2 | <2 L | <2 L | <2 | <2 | <2 L | <2 | <2 | <2 | <2 | <1 L | <2 L | <1 |
| 817-PRX-GWTS-I | 1/4/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | 7.9 |
| 817-PRX-GWTS-I[c] | 4/5/11 | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <2.3 D | <1.1 D | <2.3 D | 9.6 D |
| 817-PRX-GWTS-I[c] | 4/5/11 DUP | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <2.4 D | <1.2 D | <2.4 D | 7.7 D |

**Table 2.4-9 (Con't.). High Explosives Process Area Operable Unit high explosive compounds in ground water treatment system influent and effluent**

| Location | Date | 1,3,5-TNB (µg/L) | 1,3-DNB (µg/L) | TNT (µg/L) | 2,4-DNT (µg/L) | 2,6-DNT (µg/L) | 2-Amino-4,6- DNT (µg/L) | 2-NT (µg/L) | 3-NT (µg/L) | 4-Amino-2,6- DNT (µg/L) | 4-NT (µg/L) | HMX (µg/L) | NB (µg/L) | RDX (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Building 817-Source*** [d] | | | | | | | | | | | | | | |
| 817-SRC-GWTS-E | 2/14/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 817-SRC-GWTS-E | 3/8/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <1 |
| 817-SRC-GWTS-E | 5/18/11 | <2 IJ | <2 IJ | <2 IJ | <2 IJ | <2 IJ | <2 IJ | <2 IJ | <2 IJ | <2 IJ | <2 IJ | <1 IJ | <2 IJ | <1 IJ |
| 817-SRC-GWTS-E | 6/6/11 | <2 | <2 IJL | <2 IJL | <2 | <2 | <2 IJL | <2 | <2 | <2 | <2 | <1 IJL | <2 IJL | <1 |
| 817-SRC-GWTS-I | 2/14/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 10 | <2 | 43 |
| 817-SRC-GWTS-I | 5/18/11 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | 17 | <2 | 47 |
| ***Building 829-Source*** [e] | | | | | | | | | | | | | | |

**Notes:**

[a] **No nitrate or perchlorate monitoring required.**

[b] **No compliance monitoring conducted in January and February due to inoperative extraction wells; Influent monitoring not required.**

[c] **Due to sample dilution at CAL, PQLs were raised slightly above normal.**

[d] **No samples collected in January due to GWTS shut down for freeze protection; GWTS offline in April due to nonfunctional totalizer.**

[e] **No compliance monitoring conducted; system offline for construction and testing.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.4-10. High Explosives Process Area Operable Unit treatment facility sampling and analysis plan.**

| Sample location | Sample identification | Parameter | Frequency |
|---|---|---|---|
| ***815-SRC GWTS*** | | | |
| **Influent Port** | **815-SRC-I** | **VOCs** | **Quarterly** |
| | | **HE Compounds** | **Quarterly** |
| | | **Perchlorate** | **Quarterly** |
| **Effluent Port** | **815-SRC-E** | **VOCs** | **Monthly** |
| | | **HE Compounds** | **Monthly** |
| | | **Perchlorate** | **Monthly** |
| | | **pH** | **Monthly** |
| ***815-PRX GWTS*** | | | |
| **Influent Port** | **815-PRX-I** | **VOCs** | **Quarterly** |
| | | **Perchlorate** | **Quarterly** |
| **Effluent Port** | **815-PRX-E** | **VOCs** | **Monthly** |
| | | **HE Compounds** | **Quarterly** |
| | | **Perchlorate** | **Monthly** |
| | | **pH** | **Monthly** |
| ***815-DSB GWTS*** | | | |
| **Influent Port** | **815-DSB-I** | **VOCs** | **Quarterly** |
| **Effluent Port** | **815-DSB-E** | **VOCs** | **Monthly** |
| | | **pH** | **Monthly** |
| ***817-SRC GWTS*** | | | |
| **Influent Port** | **W-817-01-817-SRC-I** | **VOCs** | **Quarterly** |
| | | **HE Compounds** | **Quarterly** |
| | | **Perchlorate** | **Quarterly** |
| **Effluent Port** | **817-SRC-E** | **VOCs** | **Monthly** |
| | | **HE Compounds** | **Monthly** |
| | | **Perchlorate** | **Monthly** |
| | | **pH** | **Monthly** |

**Table 2.4-10 (Con't.). High Explosives Process Area Operable Unit treatment facility sampling and analysis plans.**

| Sample location | Sample identification | Parameter | Frequency |
|---|---|---|---|
| ***817-PRX GWTS*** | | | |
| **Influent Port** | **817-PRX-I** | **VOCs** | **Quarterly** |
| | | **HE Compounds** | **Quarterly** |
| | | **Perchlorate** | **Quarterly** |
| **Effluent Port** | **817-PRX-E** | **VOCs** | **Monthly** |
| | | **HE Compounds** | **Monthly** |
| | | **Perchlorate** | **Monthly** |
| | | **pH** | **Monthly** |
| ***829-SRC GWTS*** | | | |
| **Influent Port** | **W-829-06-829-SRC-I** | **VOCs** | **Quarterly** |
| | | **Perchlorate** | **Quarterly** |
| | | **Nitrate** | **Quarterly** |
| **Effluent Port** | **829-SRC-E** | **VOCs** | **Monthly** |
| | | **Perchlorate** | **Monthly** |
| | | **Nitrate** | **Monthly** |
| | | **pH** | **Monthly** |

**Notes:**

**One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.4-11. High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:NO3 | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E300.0:PERC | 4 | | |
| GALLO1 | WS | Tnbs2 | Q | WGMG | E502.2:ALL | 1 | Y | |
| GALLO1 | WS | Tnbs2 | Q | WGMG | E502.2:ALL | 2 | Y | |
| GALLO1 | WS | Tnbs2 | Q | WGMG | E502.2:ALL | 3 | | |
| GALLO1 | WS | Tnbs2 | Q | WGMG | E502.2:ALL | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E601:ALL | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 1 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 2 | Y | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 3 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 4 | | |
| GALLO1 | WS | Tnbs2 | M | CMP | E8330LOW:ALL | 4 | | |
| SPRING14 | SPR | Tpsg | O | CMP | E300.0:NO3 | 1 | Y | |
| SPRING14 | SPR | Tpsg | O | CMP | E300.0:PERC | 1 | Y | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| SPRING14 | SPR | Tpsg | O | CMP | E601:ALL | 1 | Y | |
| SPRING14 | SPR | Tpsg | O | CMP | E8330LOW:ALL | 1 | Y | |
| SPRING5 | SPR | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| SPRING5 | SPR | Tpsg | A | CMP | E300.0:PERC | 1 | N | Dry. |
| SPRING5 | SPR | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| SPRING5 | SPR | Tpsg | S | CMP | E601:ALL | 3 | | |
| SPRING5 | SPR | Tpsg | A | CMP | E8330LOW:ALL | 1 | N | Dry. |
| W-35B-01 | GW | Qal/WBR | S | CMP | E300.0:NO3 | 1 | Y | |
| W-35B-01 | GW | Qal/WBR | S | CMP | E300.0:NO3 | 3 | | |
| W-35B-01 | GW | Qal/WBR | S | CMP | E300.0:PERC | 1 | Y | |
| W-35B-01 | GW | Qal/WBR | S | CMP | E300.0:PERC | 3 | | |
| W-35B-01 | GW | Qal/WBR | Q | CMP | E601:ALL | 1 | Y | |
| W-35B-01 | GW | Qal/WBR | Q | CMP | E601:ALL | 2 | Y | |
| W-35B-01 | GW | Qal/WBR | Q | CMP | E601:ALL | 3 | | |
| W-35B-01 | GW | Qal/WBR | Q | CMP | E601:ALL | 4 | | |
| W-35B-01 | GW | Qal/WBR | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-35B-01 | GW | Qal/WBR | S | CMP | E8330LOW:ALL | 3 | | |
| W-35B-02 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-35B-02 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-35B-02 | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-35B-02 | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-35B-02 | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-35B-02 | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-35B-02 | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-35B-02 | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-35B-02 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-35B-02 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-35B-03 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-35B-03 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-35B-03 | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-35B-03 | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-35B-03 | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-35B-03 | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-35B-03 | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-35B-03 | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-35B-03 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-35B-03 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-35B-04 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-35B-04 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-35B-04 | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-35B-04 | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-35B-04 | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-35B-04 | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-35B-04 | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-35B-04 | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-35B-04 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-35B-04 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-35B-05 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-35B-05 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-35B-05 | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-35B-05 | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-35B-05 | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-35B-05 | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-35B-05 | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-35B-05 | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-35B-05 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-35B-05 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-35C-01 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-35C-01 | PTMW | Tpsg | O | CMP | E300.0:PERC | 1 | Y | |
| W-35C-01 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-35C-01 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-35C-01 | PTMW | Tpsg | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-35C-02 | PTMW | Tnbs1 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-35C-02 | PTMW | Tnbs1 | O | CMP | E300.0:PERC | 1 | Y | |
| W-35C-02 | PTMW | Tnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-35C-02 | PTMW | Tnbs1 | S | CMP | E601:ALL | 3 | | |
| W-35C-02 | PTMW | Tnbs1 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-35C-04 | EW | Tnbs2 | O | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-35C-04 | EW | Tnbs2 | O | CMP-TF | E300.0:PERC | 1 | Y | |
| W-35C-04 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-35C-04 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-35C-04 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-35C-04 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-35C-04 | EW | Tnbs2 | O | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-35C-05 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-35C-05 | PTMW | Tpsg | O | CMP | E300.0:PERC | 1 | Y | |
| W-35C-05 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-35C-05 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-35C-05 | PTMW | Tpsg | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-35C-06 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 1 | N | Inoperable pump. |
| W-35C-06 | PTMW | Qal/WBR | O | CMP | E300.0:PERC | 1 | N | Inoperable pump. |
| W-35C-06 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | N | Inoperable pump. |
| W-35C-06 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-35C-06 | PTMW | Qal/WBR | A | CMP | E8330LOW:ALL | 1 | N | Inoperable pump. |
| W-35C-07 | PTMW | Tnsc2 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-35C-07 | PTMW | Tnsc2 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-35C-07 | PTMW | Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-35C-07 | PTMW | Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-35C-07 | PTMW | Tnsc2 | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-35C-08 | PTMW | Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-35C-08 | PTMW | Tnsc2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-35C-08 | PTMW | Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-35C-08 | PTMW | Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-35C-08 | PTMW | Tnsc2 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-4A | PTMW | Tnbs2 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-4A | PTMW | Tnbs2 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-4A | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-4A | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-4A | PTMW | Tnbs2 | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-4AS | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-4AS | PTMW | Tpsg | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-4AS | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-4AS | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-4AS | PTMW | Tpsg | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-4B | PTMW | Tnbs2 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-4B | PTMW | Tnbs2 | O | CMP | E300.0:PERC | 1 | Y | |
| W-4B | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-4B | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-4B | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-4C | GW | Tnsc1b | S | CMP | E300.0:NO3 | 1 | Y | |
| W-4C | GW | Tnsc1b | S | CMP | E300.0:NO3 | 3 | | |
| W-4C | GW | Tnsc1b | S | CMP | E300.0:PERC | 1 | Y | |
| W-4C | GW | Tnsc1b | S | CMP | E300.0:PERC | 3 | | |
| W-4C | GW | Tnsc1b | Q | CMP | E601:ALL | 1 | Y | |
| W-4C | GW | Tnsc1b | Q | CMP | E601:ALL | 2 | Y | |
| W-4C | GW | Tnsc1b | Q | CMP | E601:ALL | 3 | | |
| W-4C | GW | Tnsc1b | Q | CMP | E601:ALL | 4 | | |
| W-6BD | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-6BD | PTMW | Tpsg | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-6BD | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-6BD | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-6BD | PTMW | Tpsg | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-6BS | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| W-6BS | PTMW | Qal/WBR | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-6BS | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| W-6BS | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-6BS | PTMW | Qal/WBR | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-6CD | PTMW | Tnbs2 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-6CD | PTMW | Tnbs2 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-6CD | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-6CD | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-6CD | PTMW | Tnbs2 | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-6CI | PTMW | Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-6CI | PTMW | Tnsc2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-6CI | PTMW | Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-6CI | PTMW | Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-6CI | PTMW | Tnsc2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-6CS | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-6CS | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-6CS | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-6CS | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-6CS | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-6EI | PTMW | Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-6EI | PTMW | Tnsc2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-6EI | PTMW | Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-6EI | PTMW | Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-6EI | PTMW | Tnsc2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-6ER | EW | Tnbs2 | O | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-6ER | EW | Tnbs2 | O | CMP-TF | E300.0:PERC | 1 | Y | |
| W-6ER | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-6ER | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-6ER | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-6ER | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-6ER | EW | Tnbs2 | O | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-6ES | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-6ES | PTMW | Qal/WBR | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-6ES | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| W-6ES | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-6ES | PTMW | Qal/WBR | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-6F | PTMW | Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-6F | PTMW | Tnsc2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-6F | PTMW | Tnsc2 | S | CMP | E601:ALL | 1 | Y | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-6F | PTMW | Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-6F | PTMW | Tnsc2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-6G | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-6G | PTMW | Tnbs2 | O | CMP | E300.0:PERC | 1 | Y | |
| W-6G | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-6G | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-6G | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-6H | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-6H | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-6H | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-6H | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-6H | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-6H | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-6H | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-6H | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-6H | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-6H | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-6I | PTMW | Tpsg | O | CMP | E300.0:NO3 | 1 | Y | |
| W-6I | PTMW | Tpsg | O | CMP | E300.0:PERC | 1 | Y | |
| W-6I | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-6I | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-6I | PTMW | Tpsg | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-6J | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-6J | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-6J | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-6J | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-6J | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-6J | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-6J | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-6J | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-6J | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-6J | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-6K | PTMW | Tnbs2 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-6K | PTMW | Tnbs2 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-6K | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-6K | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-6K | PTMW | Tnbs2 | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-6L | PTMW | Tnbs2 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-6L | PTMW | Tnbs2 | O | CMP | E300.0:PERC | 1 | Y | |
| W-6L | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-6L | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-6L | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-806-07 | PTMW | Tnbs2 | O | CMP | E300.0:NO3 | 1 | N | Restricted access. |
| W-806-07 | PTMW | Tnbs2 | O | CMP | E300.0:PERC | 1 | N | Restricted access. |
| W-806-07 | PTMW | Tnbs2 | O | CMP | E601:ALL | 1 | N | Restricted access. |
| W-806-07 | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | N | Restricted access. |
| W-808-01 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-808-01 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-808-01 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-808-01 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-808-01 | PTMW | Tpsg | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-808-02 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-808-02 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-808-02 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-808-02 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-808-02 | PTMW | Tpsg | O | CMP | E8330LOW:ALL | 1 | N | Dry. |
| W-808-03 | PTMW | UTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-808-03 | PTMW | UTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-808-03 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-808-03 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-808-03 | PTMW | UTnbs1 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-809-01 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-809-01 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-809-01 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-809-01 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-809-01 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-809-02 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-809-02 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-809-02 | PTMW | Tnbs2 | A | DIS | E300.0:PERC | 3 | | |
| W-809-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-809-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-809-02 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-809-03 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-809-03 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-809-03 | PTMW | Tnbs2 | A | DIS | E300.0:PERC | 3 | | |
| W-809-03 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-809-03 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-809-03 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-809-03 | PTMW | Tnbs2 | A | DIS | E8330LOW:ALL | 3 | | |
| W-809-04 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-809-04 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-809-04 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-809-04 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-809-04 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-810-01 | PTMW | UTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-810-01 | PTMW | UTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-810-01 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-810-01 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-810-01 | PTMW | UTnbs1 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-814-01 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-814-01 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-814-01 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-814-01 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-814-01 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-814-02 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | N | Inoperable pump. |
| W-814-02 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | N | Inoperable pump. |
| W-814-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | N | Inoperable pump. |
| W-814-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-814-02 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | N | Inoperable pump. |
| W-814-03 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-814-03 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-814-03 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-814-03 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-814-03 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | N | Dry. |
| W-814-04 | GW | Tnsc1b | S | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-814-04 | GW | Tnsc1b | S | CMP | E300.0:NO3 | 3 | | |
| W-814-04 | GW | Tnsc1b | S | CMP | E300.0:PERC | 1 | N | Dry. |
| W-814-04 | GW | Tnsc1b | S | CMP | E300.0:PERC | 3 | | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-814-04 | GW | Tnsc1b | Q | CMP | E601:ALL | 1 | N | Dry. |
| W-814-04 | GW | Tnsc1b | Q | CMP | E601:ALL | 2 | N | Inoperable pump. |
| W-814-04 | GW | Tnsc1b | Q | CMP | E601:ALL | 3 | | |
| W-814-04 | GW | Tnsc1b | Q | CMP | E601:ALL | 4 | | |
| W-814-2138 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-814-2138 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-814-2138 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-814-2138 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-814-2138 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-01 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-815-01 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-815-01 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-815-01 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-815-01 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | N | Dry. |
| W-815-02 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-815-02 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-815-02 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-815-02 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-815-02 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-815-02 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-815-02 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-815-02 | EW | Tnbs2 | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-815-02 | EW | Tnbs2 | A | DIS-TF | E8330LOW:ALL | 3 | | |
| W-815-03 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-815-03 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-815-03 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-815-03 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-815-03 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | N | Dry. |
| W-815-04 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-815-04 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-815-04 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-815-04 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-815-04 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-815-04 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-815-04 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-815-04 | EW | Tnbs2 | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-815-04 | EW | Tnbs2 | A | DIS-TF | E8330LOW:ALL | 3 | | |
| W-815-05 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-815-05 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-815-05 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-815-05 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-815-05 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-06 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-815-06 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-815-06 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-815-06 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-815-06 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-07 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-815-07 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-815-07 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-815-07 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-815-07 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-08 | PTMW | UTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-815-08 | PTMW | UTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-815-08 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-815-08 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-815-08 | PTMW | UTnbs1 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-1928 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-815-1928 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-815-1928 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | N | Dry. |
| W-815-1928 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-815-1928 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | N | Dry. |
| W-815-2110 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-815-2110 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-815-2110 | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-815-2110 | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-815-2110 | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-815-2110 | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-815-2110 | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-815-2110 | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-815-2110 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-2110 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-815-2111 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-815-2111 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-815-2111 | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-815-2111 | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-815-2111 | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-815-2111 | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-815-2111 | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-815-2111 | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-815-2111 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-2111 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-815-2217 | PTMW | Tnbs2 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-815-2217 | PTMW | Tnbs2 | O | CMP | E300.0:PERC | 1 | Y | |
| W-815-2217 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-815-2217 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-815-2217 | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-815-2608 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-815-2608 | EW | Tnbs2 | A | DIS-TF | E300.0:NO3 | 3 | | |
| W-815-2608 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-815-2608 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-815-2608 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-815-2608 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-815-2608 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-815-2608 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-815-2608 | EW | Tnbs2 | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-815-2608 | EW | Tnbs2 | A | DIS-TF | E8330LOW:ALL | 3 | | |
| W-815-2621 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 3 | | |
| W-815-2621 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 3 | | |
| W-815-2621 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 2 | N | Artesian well not flowing at the time of the sampling event. |
| W-815-2621 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 3 | | |
| W-815-2621 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 4 | | |
| W-815-2621 | EW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-817-01 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-817-01 | EW | Tnbs2 | S | CMP-TF | E300.0:PERC | 1 | Y | |
| W-817-01 | EW | Tnbs2 | S | DIS-TF | E300.0:PERC | 2 | Y | |
| W-817-01 | EW | Tnbs2 | S | CMP-TF | E300.0:PERC | 3 | | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-817-01 | EW | Tnbs2 | S | DIS-TF | E300.0:PERC | 4 | | |
| W-817-01 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-817-01 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-817-01 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-817-01 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-817-01 | EW | Tnbs2 | S | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-817-01 | EW | Tnbs2 | S | DIS-TF | E8330LOW:ALL | 2 | Y | |
| W-817-01 | EW | Tnbs2 | S | CMP-TF | E8330LOW:ALL | 3 | | |
| W-817-01 | EW | Tnbs2 | S | DIS-TF | E8330LOW:ALL | 4 | | |
| W-817-03 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-817-03 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-817-03 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-817-03 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-817-03 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-817-03 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-817-03 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-817-03 | EW | Tnbs2 | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-817-03 | EW | Tnbs2 | A | DIS-TF | E8330LOW:ALL | 3 | | |
| W-817-03A | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-817-03A | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-817-03A | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-817-03A | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-817-03A | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-817-04 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-817-04 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-817-04 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-817-04 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-817-04 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-817-05 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-817-05 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-817-05 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-817-05 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-817-05 | PTMW | Tnsc1b | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-817-07 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-817-07 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-817-07 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-817-07 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-817-07 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-817-2318 | EW | Tpsg | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-817-2318 | EW | Tpsg | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-817-2318 | EW | Tpsg | A | DIS-TF | E300.0:PERC | 3 | | |
| W-817-2318 | EW | Tpsg | S | CMP-TF | E601:ALL | 1 | Y | |
| W-817-2318 | EW | Tpsg | S | DIS-TF | E601:ALL | 2 | Y | |
| W-817-2318 | EW | Tpsg | S | CMP-TF | E601:ALL | 3 | | |
| W-817-2318 | EW | Tpsg | S | DIS-TF | E601:ALL | 4 | | |
| W-817-2318 | EW | Tpsg | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-817-2318 | EW | Tpsg | A | DIS-TF | E8330LOW:ALL | 3 | | |
| W-817-2609 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-817-2609 | EW | Tnbs2 | A | DIS-TF | E300.0:NO3 | 3 | | |
| W-817-2609 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-817-2609 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-817-2609 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-817-2609 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-817-2609 | EW | Tnbs2 | S | CMP-TF | E624:ALL | 1 | Y | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-817-2609 | EW | Tnbs2 | S | DIS-TF | E624:ALL | 2 | Y | |
| W-817-2609 | EW | Tnbs2 | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-817-2609 | EW | Tnbs2 | A | DIS-TF | E8330LOW:ALL | 3 | | |
| W-818-01 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-818-01 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-818-01 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-818-01 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-818-01 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-818-03 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-818-03 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-818-03 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-818-03 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-818-03 | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-818-04 | PTMW | Tnsc2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-818-04 | PTMW | Tnsc2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-818-04 | PTMW | Tnsc2 | S | CMP | E601:ALL | 1 | Y | |
| W-818-04 | PTMW | Tnsc2 | S | CMP | E601:ALL | 3 | | |
| W-818-04 | PTMW | Tnsc2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-818-06 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-818-06 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-818-06 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-818-06 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-818-06 | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-818-07 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-818-07 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-818-07 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-818-07 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-818-07 | PTMW | Tnbs2 | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-818-08 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-818-08 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-818-08 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-818-08 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-818-08 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-818-08 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-818-08 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-818-08 | EW | Tnbs2 | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-818-09 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-818-09 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-818-09 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-818-09 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-818-09 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-818-09 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-818-09 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-818-09 | EW | Tnbs2 | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-818-11 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-818-11 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-818-11 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-818-11 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-818-11 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-819-02 | PTMW | UTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-819-02 | PTMW | UTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-819-02 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-819-02 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-819-02 | PTMW | UTnbs1 | A | CMP | E8330LOW:ALL | 1 | Y | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-823-01 | PTMW | Tpsg | A | CMP | E300.0:NO3 | 1 | Y | |
| W-823-01 | PTMW | Tpsg | A | CMP | E300.0:PERC | 1 | Y | |
| W-823-01 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-823-01 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-823-01 | PTMW | Tpsg | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-823-01 | PTMW | Tpsg | A | DIS | EM8015:DIESEL | 1 | Y | |
| W-823-02 | PTMW | Tnbs2 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-823-02 | PTMW | Tnbs2 | O | CMP | E300.0:PERC | 1 | Y | |
| W-823-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-823-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-823-02 | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-823-02 | PTMW | Tnbs2 | A | DIS | EM8015:DIESEL | 1 | Y | |
| W-823-03 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-823-03 | PTMW | Tnbs2 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-823-03 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-823-03 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-823-03 | PTMW | Tnbs2 | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-823-03 | PTMW | Tnbs2 | A | DIS | EM8015:DIESEL | 1 | Y | |
| W-823-13 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-823-13 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |
| W-823-13 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-823-13 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-823-13 | PTMW | Tnbs2 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-827-01 | PTMW | Tnbs2 | O | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-827-01 | PTMW | Tnbs2 | O | CMP | E300.0:PERC | 1 | N | Dry. |
| W-827-01 | PTMW | Tnbs2 | O | CMP | E601:ALL | 1 | N | Dry. |
| W-827-01 | PTMW | Tnbs2 | O | CMP | E8330LOW:ALL | 1 | N | Dry. |
| W-827-02 | PTMW | Tnsc1 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-827-02 | PTMW | Tnsc1 | O | CMP | E300.0:PERC | 1 | Y | |
| W-827-02 | PTMW | Tnsc1 | O | CMP | E601:ALL | 1 | Y | |
| W-827-02 | PTMW | Tnsc1 | O | CMP | E8330LOW:ALL | 1 | Y | |
| W-827-03 | PTMW | UTnbs1 | O | CMP | E300.0:NO3 | 1 | N | Inoperable pump. |
| W-827-03 | PTMW | UTnbs1 | O | CMP | E300.0:PERC | 1 | N | Inoperable pump. |
| W-827-03 | PTMW | UTnbs1 | O | CMP | E601:ALL | 1 | N | Inoperable pump. |
| W-827-03 | PTMW | UTnbs1 | O | CMP | E8330LOW:ALL | 1 | N | Inoperable pump. |
| W-827-05 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-827-05 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-827-05 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-827-05 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-827-05 | PTMW | LTnbs1 | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-829-06 | EW | Tnsc1b | S | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-829-06 | EW | Tnsc1b | S | CMP-TF | E300.0:NO3 | 3 | | |
| W-829-06 | EW | Tnsc1b | S | CMP-TF | E300.0:PERC | 1 | Y | |
| W-829-06 | EW | Tnsc1b | S | CMP-TF | E300.0:PERC | 3 | | |
| W-829-06 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-829-06 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-829-06 | EW | Tnsc1b | A | CMP-TF | E8330LOW:ALL | 1 | Y | |
| W-829-15 | DMW | LTnbs1 | A | WGMG | E300.0:PERC | 2 | Y | |
| W-829-15 | DMW | LTnbs1 | A | WGMG | E624:ALL | 2 | Y | |
| W-829-15 | DMW | LTnbs1 | A | WGMG | E8330:R+H | 2 | Y | |
| W-829-15 | DMW | LTnbs1 | A | WGMG | E8330:TNT | 2 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E300.0:PERC | 1 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E300.0:PERC | 2 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E300.0:PERC | 3 | | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E300.0:PERC | 4 | | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E624:ALL | 1 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E624:ALL | 2 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E624:ALL | 3 | | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E624:ALL | 4 | | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:R+H | 1 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:R+H | 2 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:R+H | 3 | | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:R+H | 4 | | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:TNT | 1 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:TNT | 2 | Y | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:TNT | 3 | | |
| W-829-1938 | DMW | LTnbs1 | Q | WGMG | E8330:TNT | 4 | | |
| W-829-1940 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-829-1940 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-829-1940 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-829-1940 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-829-1940 | PTMW | Tnsc1b | A | CMP | E8330LOW:ALL | 1 | Y | |
| W-829-22 | DMW | LTnbs1 | A | WGMG | E300.0:PERC | 2 | Y | |
| W-829-22 | DMW | LTnbs1 | A | WGMG | E624:ALL | 2 | Y | |
| W-829-22 | DMW | LTnbs1 | A | WGMG | E8330:R+H | 2 | Y | |
| W-829-22 | DMW | LTnbs1 | A | WGMG | E8330:TNT | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 3 | | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E601:ALL | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 1 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 2 | Y | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 3 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 4 | | |
| WELL18 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:NO3 | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E300.0:PERC | 4 | | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 3 | | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 3 | | |
| WELL20 | WS | Tnbs1 | M | WGMG | E502.2:ALL | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 1 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 2 | Y | |

**Table 2.4-11 (Con't.). High Explosives Process Area Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 2 | Y | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 3 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 4 | | |
| WELL20 | WS | Tnbs1 | M | CMP | E8330LOW:ALL | 4 | | |

**Notes:**

1) **W-829-15, W-829-22, and W-829-1938 are detection monitoring wells. Analytes and sampling frequency are specified in the RCRA Closure Plan for the High Explosives Open Burn Facility.**
2) **HEPA primary COC: VOCs (E601 or E624).**
3) **HEPA secondary COC: nitrate (E300:NO3).**
4) **HEPA secondary COC: perchlorate (E300.0:PERC).**
5) **HEPA secondary COC: HE compounds (E8330).**
6) **Wells noted with "*" are sampled as part of the surveillance monitoring performed by the Water Guidance and Monitoring Group (WGMG) for additional constituents and the results are reported in the LLNL Site Annual Environmental Report.**
7) **See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.4-12. Building 815-Source (815-SRC) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 815-SRC | January | NA | 0.94 | 1.2 | 15 | 10 | NA |
| | February | NA | 0.71 | 0.75 | 12 | 5.2 | NA |
| | March | NA | 0.66 | 0.64 | 12 | 4.7 | NA |
| | April | NA | 0.99 | 0.89 | 16 | 6.4 | NA |
| | May | NA | 1.4 | 1.1 | 22 | 8.0 | NA |
| | June | NA | 1.3 | 0.95 | 21 | 7.2 | NA |
| Total | | NA | 5.9 | 5.5 | 98 | 42 | NA |

**Notes:**

*Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign $N_2$ gas by anaerobic denitrifying bacteria.

**Table 2.4-13. Building 815-Proximal (815-PRX) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 815-PRX | January | NA | 0 | 0 | 0 | NA | NA |
| | February | NA | 0 | 0 | 0 | NA | NA |
| | March | NA | 4.3 | 1.2 | 14 | NA | NA |
| | April | NA | 3.5 | 2.4 | 28 | NA | NA |
| | May | NA | 4.0 | 2.7 | 33 | NA | NA |
| | June | NA | 4.0 | 2.7 | 32 | NA | NA |
| Total | | NA | 16 | 9.0 | 110 | NA | NA |

**Notes:**

*Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign $N_2$ gas by anaerobic denitrifying bacteria.

**Table 2.4-14. Building 815-Distal Site Boundary (815-DSB) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 815-DSB | January | NA | 5.8 | NA | NA | NA | NA |
| | February | NA | 6.2 | NA | NA | NA | NA |
| | March | NA | 7.1 | NA | NA | NA | NA |
| | April | NA | 5.9 | NA | NA | NA | NA |
| | May | NA | 6.9 | NA | NA | NA | NA |
| | June | NA | 6.0 | NA | NA | NA | NA |
| Total | | NA | 38 | NA | NA | NA | NA |

**Table 2.4-15. Building 817-Source (817-SRC) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 817-SRC | January | NA | 0 | 0 | 0 | 0 | NA |
| | February | NA | 0 | 0.0036 | 0.011 | 0.0062 | NA |
| | March | NA | 0 | 0.0012 | 0.0039 | 0.0021 | NA |
| | April | NA | 0 | 0 | 0 | 0 | NA |
| | May | NA | 0 | 0.023 | 0.063 | 0.037 | NA |
| | June | NA | 0 | 0.045 | 0.13 | 0.074 | NA |
| Total | | NA | 0 | 0.073 | 0.20 | 0.12 | NA |

**Notes:**

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign $N_2$ gas by anaerobic denitrifying bacteria.**

**Table 2.4-16. Building 817-Proximal (817-PRX) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 817-PRX | January | NA | 1.6 | 4.9 | 19 | 1.9 | NA |
| | February | NA | 1.3 | 4.0 | 15 | 1.4 | NA |
| | March | NA | 1.4 | 3.3 | 14 | 1.0 | NA |
| | April | NA | 3.1 | 4.0 | 19 | 1.2 | NA |
| | May | NA | 3.2 | 3.7 | 18 | 1.1 | NA |
| | June | NA | 1.9 | 2.2 | 11 | 0.61 | NA |
| Total | | NA | 13 | 22 | 96 | 7.2 | NA |

**Notes:**

***Nitrate re-injected into the $Tnbs_2$ HSU undergoes in-situ biotransformation to benign $N_2$ gas by anaerobic denitrifying bacteria.**

**Table 2.4-17. Building 829-Source (829-SRC) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 829-SRC | January | NA | 0 | 0 | 0 | NA | NA |
| | February | NA | 0 | 0 | 0 | NA | NA |
| | March | NA | 0 | 0 | 0 | NA | NA |
| | April | NA | 0 | 0 | 0 | NA | NA |
| | May | NA | 0 | 0 | 0 | NA | NA |
| | June | NA | 0 | 0 | 0 | NA | NA |
| Total | | NA | 0 | 0 | 0 | NA | NA |

**Table 2.5-1. Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-01C | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-02B | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 1 | | To be sampled in 2012. |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-04 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-05 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-06 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 1 | | To be sampled in 2012. |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K1-07 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-08 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 1 | | To be sampled in 2012. |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| K1-09 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| K2-03 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K2-03 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K2-03 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| K2-03 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| K2-03 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K2-03 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K2-04D | PTMW | Tnbs1-Tnbs0 | O | CMP | AS:UISO | 2 | Y | |
| K2-04D | PTMW | Tnbs1-Tnbs0 | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| K2-04D | PTMW | Tnbs1-Tnbs0 | A | WGMG | E300.0:PERC | 2 | Y | |
| K2-04D | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| K2-04D | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K2-04D | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K2-04S | PTMW | Qal/WBR | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| K2-04S | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| K2-04S | PTMW | Qal/WBR | A | WGMG | E300.0:PERC | 2 | Y | |
| K2-04S | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| K2-04S | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| K2-04S | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC2-05 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-05 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-05 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-05 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-05 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-05 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-05A | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-05A | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-05A | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-05A | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-05A | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-05A | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-06 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-06 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-06 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-06 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-06 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-06 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-06A | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-06A | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-06A | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-06A | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-06A | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-06A | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-06A | PTMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| NC2-09 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-09 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-09 | PTMW | Tnbs1-Tnbs0 | A | DIS | E300.0:PERC | 2 | Y | |
| NC2-09 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-09 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-10 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-10 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-10 | PTMW | Tnbs1-Tnbs0 | A | DIS | E300.0:PERC | 2 | Y | |
| NC2-10 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-10 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-11D | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC2-11D | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-11D | PTMW | Tnbs1-Tnbs0 | S | WGMG | E300.0:PERC | 2 | Y | |
| NC2-11D | PTMW | Tnbs1-Tnbs0 | S | WGMG | E300.0:PERC | 4 | | |
| NC2-11D | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-11D | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-11D | PTMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| NC2-11I | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | N | Unsafe conditions. |
| NC2-11I | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | N | Unsafe conditions. |
| NC2-11I | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | N | Unsafe conditions. |
| NC2-11I | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-11I | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | N | Unsafe conditions. |
| NC2-11I | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-11S | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-11S | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-11S | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-11S | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-11S | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-11S | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-12D | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-12D | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-12D | PTMW | Tnbs1-Tnbs0 | A | WGMG | E300.0:PERC | 2 | Y | |
| NC2-12D | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-12D | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-12D | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-12I | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-12I | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-12I | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-12I | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-12I | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-12I | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-12S | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-12S | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-12S | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-12S | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-12S | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-12S | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-13 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-13 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-13 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-13 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-13 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-13 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-14S | PTMW | Qal/WBR | O | CMP | AS:UISO | 2 | Y | |
| NC2-14S | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC2-14S | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 1 | Y | |
| NC2-14S | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 3 | | |
| NC2-14S | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC2-14S | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC2-15 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-15 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-15 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-15 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-15 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-15 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-16 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC2-16 | PTMW | Tnbs1-Tnbs0 | O | CMP | E300.0:NO3 | 2 | Y | |
| NC2-16 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 1 | Y | |
| NC2-16 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 3 | | |
| NC2-16 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC2-16 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-17 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | N | Unsafe conditions. |
| NC2-17 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | N | Unsafe conditions. |
| NC2-17 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | N | Unsafe conditions. |
| NC2-17 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-17 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | N | Unsafe conditions. |
| NC2-17 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-18 | PTMW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 2 | Y | |
| NC2-18 | PTMW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 4 | | |
| NC2-18 | PTMW | Tnbs1-Tnbs0 | O | CMP | E300.0:NO3 | 2 | Y | |
| NC2-18 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-18 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-18 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-18 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-19 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC2-19 | PTMW | Tnbs1-Tnbs0 | O | CMP | E300.0:NO3 | 2 | Y | |
| NC2-19 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-19 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-19 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-19 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-20 | PTMW | Tnbs1-Tnbs0 | O | CMP | AS:UISO | 2 | Y | |
| NC2-20 | PTMW | Tnbs1-Tnbs0 | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC2-20 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC2-20 | PTMW | Tnbs1-Tnbs0 | A | CMP | E906:ALL | 2 | Y | |
| NC2-21 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC2-21 | PTMW | Tnbs1-Tnbs0 | O | CMP | E300.0:NO3 | 2 | Y | |
| NC2-21 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC2-21 | PTMW | Tnbs1-Tnbs0 | A | CMP | E906:ALL | 2 | Y | |
| NC7-10 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-10 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-10 | PTMW | Qal/WBR | S | DIS | E300.0:PERC | 1 | Y | |
| NC7-10 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-10 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-10 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-10 | PTMW | Qal/WBR | A | DIS | MS:UISO | 2 | Y | |
| NC7-11 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-11 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-11 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-11 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-11 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-11 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-11 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-14 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Insufficient water. |
| NC7-14 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Insufficient water. |
| NC7-14 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | N | Insufficient water. |
| NC7-14 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-14 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | N | Insufficient water. |
| NC7-14 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Insufficient water. |
| NC7-14 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-15 | PTMW | Qal/WBR | O | CMP | AS:UISO | 2 | Y | |
| NC7-15 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC7-15 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-15 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-15 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-15 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-19 | PTMW | Qal/WBR | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC7-19 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-19 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-19 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC7-19 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-19 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-19 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-27 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-27 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-27 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-27 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC7-27 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-27 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-27 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | S | DIS | E300.0:PERC | 1 | Y | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | Q | DIS | MS:UISO | 1 | Y | |
| NC7-28 | PTMW | Tnbs1-Tnbs0 | Q | DIS | MS:UISO | 2 | Y | |
| NC7-29 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-29 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-29 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-29 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC7-29 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-29 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-43 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-43 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-43 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-43 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC7-43 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-43 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-43 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-44 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-44 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-44 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-44 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC7-44 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-44 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-44 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-46 | PTMW | Qal/WBR | O | CMP | AS:UISO | 2 | Y | |
| NC7-46 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC7-46 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-46 | PTMW | Qal/WBR | A | CMP | E906:ALL | 2 | Y | |
| NC7-54 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Insufficient water. |
| NC7-54 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Insufficient water. |
| NC7-54 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | N | Insufficient water. |
| NC7-54 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-54 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Insufficient water. |
| NC7-54 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-55 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| NC7-55 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | N | Dry. |
| NC7-55 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | N | Dry. |
| NC7-55 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-55 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| NC7-55 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-56 | PTMW | Qal/WBR | O | CMP | AS:UISO | 2 | Y | |
| NC7-56 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC7-56 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC7-56 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-56 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-56 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-56 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-57 | PTMW | Qal/WBR | O | CMP | AS:UISO | 2 | N | Dry. |
| NC7-57 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC7-57 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | N | Dry. |
| NC7-57 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-57 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| NC7-57 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-58 | PTMW | Qal/WBR | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC7-58 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC7-58 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-58 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-58 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-58 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-59 | PTMW | Qal/WBR | O | CMP | AS:UISO | 2 | Y | |
| NC7-59 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC7-59 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-59 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-59 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-59 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-60 | PTMW | Tnsc0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC7-60 | PTMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-60 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 1 | Y | |
| NC7-60 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 3 | | |
| NC7-60 | PTMW | Tnsc0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-60 | PTMW | Tnsc0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-60 | PTMW | Tnsc0 | S | CMP | E906:ALL | 4 | | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | O | DIS | E8082A:ALL | 2 | Y | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | S | WGMG | E906:ALL | 2 | Y | |
| NC7-61 | PTMW | Tnbs1-Tnbs0 | S | WGMG | E906:ALL | 4 | | |
| NC7-62 | PTMW | Qal/WBR | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC7-62 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC7-62 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-62 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-62 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-62 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-69 | PTMW | Tmss | A | CMP | AS:UISO | 2 | Y | |
| NC7-69 | PTMW | Tmss | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-69 | PTMW | Tmss | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-69 | PTMW | Tmss | S | CMP | E300.0:PERC | 4 | | |
| NC7-69 | PTMW | Tmss | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-69 | PTMW | Tmss | S | CMP | E906:ALL | 2 | Y | |
| NC7-69 | PTMW | Tmss | S | CMP | E906:ALL | 4 | | |
| NC7-70 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-70 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-70 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC7-70 | PTMW | Tnbs1-Tnbs0 | O | CMP | E8082A:ALL | 2 | Y | |
| NC7-70 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-70 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-70 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC7-70 | PTMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| NC7-71 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-71 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-71 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-71 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-71 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-71 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-71 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-72 | PTMW | Qal/WBR | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| NC7-72 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC7-72 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-72 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-72 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-72 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-72 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-73 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-73 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC7-73 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-73 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| NC7-73 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| NC7-73 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-73 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| SPRING24 | SPR | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| SPRING24 | SPR | Tnbs1-Tnbs0 | O | CMP | E300.0:NO3 | 2 | N | Dry. |
| SPRING24 | SPR | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | N | Dry. |
| SPRING24 | SPR | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| SPRING24 | SPR | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | N | Dry. |
| SPRING24 | SPR | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-850-05 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-850-05 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-850-05 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-05 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| W-850-05 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| W-850-05 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-850-05 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-850-2145 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| W-850-2145 | PTMW | Tnbs1-Tnbs0 | O | CMP | E300.0:NO3 | 2 | Y | |
| W-850-2145 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2145 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-850-2145 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-850-2145 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-850-2312 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| W-850-2312 | PTMW | Tnbs1-Tnbs0 | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| W-850-2312 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2312 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-850-2312 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-850-2312 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-850-2313 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-850-2313 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| W-850-2313 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2313 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| W-850-2313 | PTMW | Qal/WBR | S | DIS | E8330LOW:ALL | 2 | Y | |
| W-850-2313 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-850-2313 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-850-2313 | PTMW | Qal/WBR | A | DIS | MS:UISO | 2 | Y | |
| W-850-2314 | PTMW | Tnbs1-Tnbs0 | O | CMP | AS:UISO | 2 | Y | |
| W-850-2314 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-850-2314 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2314 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-850-2314 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| W-850-2314 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-850-2314 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-850-2315 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| W-850-2315 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-850-2315 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2315 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-850-2315 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-850-2315 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-850-2316 | PTMW | Tnbs1-Tnbs0 | O | CMP | AS:UISO | 2 | Y | |
| W-850-2316 | PTMW | Tnbs1-Tnbs0 | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| W-850-2316 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2316 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-850-2316 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-850-2316 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-850-2416 | PTMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| W-850-2416 | PTMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-850-2416 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2416 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-850-2416 | PTMW | Tnsc0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| W-850-2416 | PTMW | Tnsc0 | S | CMP | E906:ALL | 2 | Y | |
| W-850-2416 | PTMW | Tnsc0 | S | CMP | E906:ALL | 4 | | |
| W-850-2416 | PTMW | Tnsc0 | A | DIS | MS:UISO | 2 | Y | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | Q | DIS | MS:UISO | 1 | Y | |
| W-850-2417 | PTMW | Tnbs1-Tnbs0 | Q | DIS | MS:UISO | 2 | Y | |
| W-865-02 | PTMW | Tnbs1-Tnbs0 | S | DIS | E300.0:NO3 | 1 | Y | |
| W-865-02 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 1 | Y | |
| W-865-02 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 1 | Y | |
| W-865-02 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 1 | Y | |
| W-865-02 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 3 | | |
| W-865-05 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-865-05 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 1 | N | Dry. |
| W-865-05 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 3 | | |
| W-865-1802 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| W-865-1802 | PTMW | Tnbs1-Tnbs0 | A | DIS | E300.0:NO3 | 2 | Y | |
| W-865-1802 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| W-865-1802 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 1 | Y | |
| W-865-1802 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-865-1802 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-865-1803 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| W-865-1803 | PTMW | Tnbs1-Tnbs0 | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| W-865-1803 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-865-1803 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-865-1803 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-865-1803 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | S | DIS | E300.0:NO3 | 1 | Y | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 1 | Y | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| W-865-2005 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| W-865-2121 | PTMW | Tnbs1-Tnbs0 | S | DIS | E300.0:NO3 | 1 | Y | |
| W-865-2121 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 1 | Y | |
| W-865-2121 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 1 | Y | |
| W-865-2121 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-865-2121 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 1 | Y | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 3 | | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | S | DIS | E300.0:NO3 | 1 | Y | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 1 | Y | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 2 | Y | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 3 | | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 4 | | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 1 | Y | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 1 | Y | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 2 | Y | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 3 | | |
| W-865-2133 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 4 | | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 2 | Y | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 4 | | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 2 | Y | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 4 | | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 1 | Y | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 2 | Y | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 3 | | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 4 | | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 2 | Y | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 1 | Y | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 2 | Y | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 3 | | |
| W-865-2224 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 4 | | |
| W-PIT1-01 | PTMW | Tnbs1-Tnbs0 | O | CMP | AS:UISO | 1 | N | Dry. |
| W-PIT1-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 1 | N | Dry. |
| W-PIT1-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 3 | | |
| W-PIT1-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 1 | N | Dry. |
| W-PIT1-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 3 | | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | A | DIS | E300.0:NO3 | 2 | Y | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 2 | Y | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| W-PIT1-02 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| W-PIT1-2204 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT1-2204 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT1-2204 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| W-PIT1-2204 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| W-PIT1-2204 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-PIT1-2204 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 2 | Y | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 4 | | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 4 | | |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 2 | Y | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| W-PIT1-2209 | GW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 2 | Y | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 4 | | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 4 | | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 1 | Y | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 2 | Y | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 3 | | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 4 | | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 1 | Y | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 2 | Y | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 3 | | |
| W-PIT1-2225 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 4 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 1 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 2 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 3 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | AS:UISO | 4 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 1 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 2 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 3 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:NO3 | 4 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 1 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 2 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 1 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 2 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 3 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8260:ALL | 4 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 1 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 2 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 3 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E8330:R+H | 4 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 1 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 2 | Y | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| W-PIT1-2326 | DMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| W-PIT1-2620 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 3 | | |
| W-PIT1-2620 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E300.0:PERC | 4 | | |
| W-PIT1-2620 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 3 | | |
| W-PIT1-2620 | PTMW | Tnbs1-Tnbs0 | Q | WGMG | E906:ALL | 4 | | |
| W-PIT7-16 | PTMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| W-PIT7-16 | PTMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-16 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-16 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-PIT7-16 | PTMW | Tnsc0 | S | DIS | E8330LOW:ALL | 2 | Y | |
| W-PIT7-16 | PTMW | Tnsc0 | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-16 | PTMW | Tnsc0 | S | CMP | E906:ALL | 4 | | |
| W8SPRNG | SPR | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | N | Dry. |
| W8SPRNG | SPR | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W8SPRNG | SPR | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | N | Dry. |

**Table 2.5-1 (Con't.). Building 850 Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W8SPRNG | SPR | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W8SPRNG | SPR | Tnbs1-Tnbs0 | S | DIS | E8330LOW:ALL | 2 | N | Dry. |
| W8SPRNG | SPR | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | N | Dry. |
| W8SPRNG | SPR | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |

**Notes:**

1) **K1-01C, K1-02B, K1-04, K1-05, K1-07, K1-08, K1-09, and W-PIT1-2326 are Pit 1 Landfill detection monitoring wells. Analytes and sampling frequency are specified in Waste Discharge Requirements for the Pit 1 Landfill.**
2) **Building 850 primary COC: tritium (E906).**
3) **Building 850 secondary COC: nitrate (E300.0:NO3).**
4) **Building 850 primary COC: perchlorate (E300.0:PERC).**
5) **Building 850 secondary COC: uranium (MS:UISO).**
6) **Wells noted with "*" are sampled as part of the surveillance monitoring performed by the Water Guidance and Monitoring Group (WGMG) for additional constituents and the results are reported in the LLNL Site Annual Environmental Report.**
7) **See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.5-2. Pit 7-Source (PIT7-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| PIT7-SRC | January | NA | 707 | NA | 7,889 |
| | February | NA | 544 | NA | 4,700 |
| | March | NA | 704 | NA | 4,647 |
| | April | NA | 499 | NA | 2,286 |
| | May | NA | 793 | NA | 3,022 |
| | June | NA | 665 | NA | 2,555 |
| **Total** | | NA | 3,912 | NA | 25,099 |

**Table 2.5-3. Pit 7-Source (PIT7-SRC) volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIT7-SRC-GWTS-E | 1/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-E | 2/15/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-E | 3/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 0.65 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-E[a] | 3/23/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-E[a] | 3/28/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-E | 4/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-E | 5/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-I | 1/4/11 | 4.4 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 1.3 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-I | 4/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| PIT7-SRC-GWTS-I | 4/6/11 DUP | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

**Notes:**

[a] **Additional effluent samples collected to comply with effluent discharge limits due to chloroform detection on March 7, 2011.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.5-3 (Con't.). Analyte detected but not reported in main table.**

| Location | Date | Detection frequency |
|---|---|---|
| PIT7-SRC-GWTS-E | 1/4/11 | 0 of 18 |
| PIT7-SRC-GWTS-E | 2/15/11 | 0 of 18 |
| PIT7-SRC-GWTS-E | 3/7/11 | 0 of 18 |
| PIT7-SRC-GWTS-E[a] | 3/23/11 | 0 of 18 |
| PIT7-SRC-GWTS-E[a] | 3/28/11 | 0 of 18 |
| PIT7-SRC-GWTS-E | 4/6/11 | 0 of 18 |
| PIT7-SRC-GWTS-E | 5/4/11 | 0 of 18 |
| PIT7-SRC-GWTS-E | 6/6/11 | 0 of 18 |
| PIT7-SRC-GWTS-I | 1/4/11 | 0 of 18 |

**Table 2.5-3 (Con't.). Analyte detected but not reported in main table.**

| Location | Date | Detection frequency |
|---|---|---|
| PIT7-SRC-GWTS-I | 4/6/11 | 0 of 18 |
| PIT7-SRC-GWTS-I | 4/6/11 DUP | 0 of 18 |

**Notes:**

[a] **Additional effluent samples collected to comply with effluent discharge limits due to chloroform detection on March 7, 2011.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.5-4. Pit 7-Source (PIT7-SRC) nitrate and perchlorate in ground water treatment system influent and effluent.**

| Location | Date | Nitrate (as NO3) (mg/L) | Perchlorate (µg/L) |
|---|---|---|---|
| PIT7-SRC-GWTS-E | 1/4/11 | <0.5 | <4 |
| PIT7-SRC-GWTS-E | 2/15/11 | 40 | <4 |
| PIT7-SRC-GWTS-E[a] | 2/17/11 | 39 | - |
| PIT7-SRC-GWTS-E[a] | 2/28/11 | 44 | - |
| PIT7-SRC-GWTS-E | 3/7/11 | <0.5 | <4 |
| PIT7-SRC-GWTS-E[a] | 3/23/11 | <0.5 | - |
| PIT7-SRC-GWTS-E | 4/6/11 | <0.5 | <4 |
| PIT7-SRC-GWTS-E | 5/4/11 | <0.5 | <4 |
| PIT7-SRC-GWTS-E | 6/6/11 | <0.5 | <4 |
| PIT7-SRC-GWTS-I | 1/4/11 | 33 | 11 |
| PIT7-SRC-GWTS-I | 2/28/11 | 35 | 11 |
| PIT7-SRC-GWTS-I | 4/6/11 | 46 | 12 |
| PIT7-SRC-GWTS-I | 04/06/11 DUP | 47 | 12 |
| PIT7-SRC-GWTS-I[a] | 5/4/11 | 40 | - |

**Notes:**

[a] **Extra nitrate monitoring conducted to evaluate nitrate flucuations and change to treatment chain.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.5-5. Pit 7-Source (PIT7-SRC) total uranium in ground water treatment system influent and effluent.**

| Location | Date | Total Uranium by Alpha Spec (pCi/L) | Total Uranium by ICPMS (pCi/L) |
|---|---|---|---|
| PIT7-SRC-GWTS-E | 1/4/11 | <0.3 | – |
| PIT7-SRC-GWTS-E | 2/15/11 | <0.3 | – |
| PIT7-SRC-GWTS-E | 3/7/11 | <0.3 | – |
| PIT7-SRC-GWTS-E | 4/6/11 | <0.3 | – |
| PIT7-SRC-GWTS-E | 5/4/11 | <0.3 | – |
| PIT7-SRC-GWTS-E | 6/6/11 | <0.3 | – |
| PIT7-SRC-GWTS-I | 1/4/11 | 13.6 ± 2.04 | – |
| PIT7-SRC-GWTS-I | 4/6/11 | 32.5 ± 3.96 | 34.0 ± 0.560 |
| PIT7-SRC-GWTS-I | 4/6/11 DUP | 38.6 ± 4.86 | – |

**Notes:**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.5-6. Pit 7-Source (PIT7-SRC) tritium in ground water treatment system influent and effluent.**

| Location | Date | Tritium (pCi/L) |
|---|---|---|
| PIT7-SRC-GWTS-E | 1/4/11 | 45,500 ± 8,840 |
| PIT7-SRC-GWTS-E | 2/15/11 | 39,800 ± 7,730 L |
| PIT7-SRC-GWTS-E | 3/7/11 | 46,300 ± 9,010 |
| PIT7-SRC-GWTS-E | 4/6/11 | 69,500 ± 13,500 |
| PIT7-SRC-GWTS-E | 5/4/11 | 45,000 ± 8,750 |
| PIT7-SRC-GWTS-E | 6/6/11 | 41,200 ± 8,010 |
| PIT7-SRC-GWTS-I | 1/4/11 | 45,600 ± 8,870 |
| PIT7-SRC-GWTS-I | 4/6/11 | 67,100 ± 13,000 |
| PIT7-SRC-GWTS-I | 4/6/11 DUP | 70,000 ± 13,600 |

**Notes:**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

## Table 2.5-7. Pit 7-Source (PIT7-SRC) treatment facility sampling and analysis plan.

| Sample location | Sample identification | Parameter | Frequency |
|---|---|---|---|
| *PIT7-SRC GWTS* | | | |
| Influent Port | PIT7-SRC-I | VOCs | Quarterly |
| | | Uranium | Quarterly |
| | | Perchlorate | Quarterly |
| | | Nitrate | Quarterly |
| | | Tritium[a] | Quarterly |
| | | pH | Quarterly |
| Effluent Port | PIT7-SRC-E | VOCs | Monthly |
| | | Uranium | Monthly |
| | | Perchlorate | Monthly |
| | | Nitrate | Monthly |
| | | Tritium[a] | Monthly |
| | | pH | Monthly |

**Notes:**

[a] Although tritium is not treated/removed by the PIT7-SRC GWTS, tritium activities will be monitoring to determine levels that are being discharged to the infiltration trench.

One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.

See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.

**Table 2.5-8. Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 1 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | E8082A:ALL | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| K7-01 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | E8082A:ALL | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| K7-03 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | E8082A:ALL | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K7-06 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K7-06 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K7-07 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Insufficient water. |
| K7-07 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| K7-07 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Insufficient water. |
| K7-07 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | N | Insufficient water. |
| K7-07 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Insufficient water. |
| K7-07 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| K7-09 | DMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| K7-09 | DMW | Tnsc0 | A | CMP | E200.7:LI | 2 | Y | |
| K7-09 | DMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K7-09 | DMW | Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| K7-09 | DMW | Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| K7-09 | DMW | Tnsc0 | A | CMP | E340.2:ALL | 2 | Y | |
| K7-09 | DMW | Tnsc0 | A | CMP | E601:ALL | 2 | Y | |
| K7-09 | DMW | Tnsc0 | A | CMP | E8082A:ALL | 2 | Y | |
| K7-09 | DMW | Tnsc0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K7-09 | DMW | Tnsc0 | S | CMP | E906:ALL | 2 | Y | |
| K7-09 | DMW | Tnsc0 | S | CMP | E906:ALL | 4 | | |
| K7-09 | DMW | Tnsc0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |

**Table 2.5-8 (Con't.). Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | E8082A:ALL | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K7-10 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K7-10 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| NC7-12 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-12 | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC7-12 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-12 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-12 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-12 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-12 | PTMW | Qal/WBR | A | DIS | MS:UISO | 2 | Y | |
| NC7-16 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-16 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-16 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-16 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-16 | PTMW | Qal/WBR | S | DIS | E906:ALL | 1 | Y | |
| NC7-16 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-16 | PTMW | Qal/WBR | S | DIS | E906:ALL | 3 | | |
| NC7-16 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-16 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 1 | Y | |
| NC7-16 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 2 | Y | |
| NC7-16 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 3 | | |
| NC7-17 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-17 | PTMW | Qal/WBR | A | DIS | E200.7:SI | 2 | Y | |
| NC7-17 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-17 | PTMW | Qal/WBR | E | CMP | E300.0:PERC | 2 | | To be sampled in 2012. |
| NC7-17 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-17 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-17 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-17 | PTMW | Qal/WBR | A | DIS | GENMIN:ALL | 2 | Y | |
| NC7-18 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-18 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-18 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-18 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-18 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-18 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-20 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-20 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC7-20 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-20 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-20 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-20 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-21 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-21 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-21 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-21 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-21 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-21 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-22 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |

**Table 2.5-8 (Con't.). Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC7-22 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| NC7-22 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Dry. |
| NC7-22 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | N | Dry. |
| NC7-22 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| NC7-22 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-24 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| NC7-24 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| NC7-24 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Dry. |
| NC7-24 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| NC7-24 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-25 | EW | Tnbs1-Tnbs0 | A | CMP-TF | AS:UISO | 2 | Y | |
| NC7-25 | EW | Tnbs1-Tnbs0 | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| NC7-25 | EW | Tnbs1-Tnbs0 | A | CMP-TF | E300.0:PERC | 2 | Y | |
| NC7-25 | EW | Tnbs1-Tnbs0 | A | CMP-TF | E601:ALL | 2 | Y | |
| NC7-25 | EW | Tnbs1-Tnbs0 | S | CMP-TF | E906:ALL | 2 | Y | |
| NC7-25 | EW | Tnbs1-Tnbs0 | S | CMP-TF | E906:ALL | 4 | | |
| NC7-25 | EW | Tnbs1-Tnbs0 | A | DIS-TF | KPA:UTOT | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | E8082A:ALL | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| NC7-26 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| NC7-34 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-34 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-34 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-34 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-34 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-34 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-36 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-36 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-36 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-36 | PTMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| NC7-36 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-36 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-37 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| NC7-37 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| NC7-37 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Dry. |
| NC7-37 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | N | Dry. |
| NC7-37 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| NC7-37 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-40 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-40 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-40 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-40 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-40 | PTMW | Qal/WBR | S | DIS | E906:ALL | 1 | Y | |
| NC7-40 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-40 | PTMW | Qal/WBR | S | DIS | E906:ALL | 3 | | |
| NC7-40 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |

**Table 2.5-8 (Con't.). Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC7-40 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 1 | Y | |
| NC7-40 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 2 | Y | |
| NC7-40 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 3 | | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E8082A:ALL | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | E906:ALL | 2 | Y | |
| NC7-47 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | E200.7:LI | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | E340.2:ALL | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | E8082A:ALL | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | E8330LOW:ALL | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-48 | DMW | Qal/WBR | A | DIS | MS:UISO | 2 | Y | |
| NC7-48 | DMW | Qal/WBR | A | CMP | T26METALS:ALL | 2 | Y | |
| NC7-49A | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-49A | PTMW | Qal/WBR | E | CMP | E300.0:NO3 | 2 | | To be sampled in 2012. |
| NC7-49A | PTMW | Qal/WBR | E | CMP | E300.0:PERC | 2 | | To be sampled in 2012. |
| NC7-49A | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-49A | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-51 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-51 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-51 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-51 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| NC7-51 | PTMW | Qal/WBR | S | DIS | E906:ALL | 1 | Y | |
| NC7-51 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-51 | PTMW | Qal/WBR | S | DIS | E906:ALL | 3 | | |
| NC7-51 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| NC7-51 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 1 | Y | |
| NC7-51 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 2 | Y | |
| NC7-51 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 3 | | |
| NC7-52 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-52 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-52 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-52 | PTMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| NC7-52 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 1 | Y | |
| NC7-52 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 3 | | |
| NC7-53 | PTMW | Qal/WBR | A | DIS | AS:UISO | 2 | Y | |
| NC7-53 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC7-53 | PTMW | Qal/WBR | O | CMP | E300.0:PERC | 2 | Y | |
| NC7-53 | PTMW | Qal/WBR | O | DIS | E906:ALL | 2 | Y | |
| NC7-63 | EW | Qal/WBR | A | CMP-TF | AS:UISO | 2 | Y | |
| NC7-63 | EW | Qal/WBR | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| NC7-63 | EW | Qal/WBR | A | CMP-TF | E300.0:PERC | 2 | Y | |
| NC7-63 | EW | Qal/WBR | A | CMP-TF | E601:ALL | 2 | Y | |

**Table 2.5-8 (Con't.). Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| NC7-63 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 2 | Y | |
| NC7-63 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 4 | | |
| NC7-63 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 1 | Y | |
| NC7-63 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 2 | Y | |
| NC7-64 | EW | Qal/WBR | A | CMP-TF | AS:UISO | 2 | Y | |
| NC7-64 | EW | Qal/WBR | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| NC7-64 | EW | Qal/WBR | A | CMP-TF | E300.0:PERC | 2 | Y | |
| NC7-64 | EW | Qal/WBR | A | CMP-TF | E601:ALL | 2 | Y | |
| NC7-64 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 2 | Y | |
| NC7-64 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 4 | | |
| NC7-64 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 1 | Y | |
| NC7-64 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 2 | Y | |
| NC7-64 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 3 | | |
| NC7-65 | PTMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-65 | PTMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-65 | PTMW | Tnsc0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-65 | PTMW | Tnsc0 | A | CMP | E601:ALL | 2 | Y | |
| NC7-65 | PTMW | Tnsc0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-65 | PTMW | Tnsc0 | S | CMP | E906:ALL | 4 | | |
| NC7-65 | PTMW | Tnsc0 | A | DIS | MS:UISO | 2 | Y | |
| NC7-67 | PTMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-67 | PTMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-67 | PTMW | Tnsc0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-67 | PTMW | Tnsc0 | A | CMP | E601:ALL | 2 | Y | |
| NC7-67 | PTMW | Tnsc0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-67 | PTMW | Tnsc0 | S | CMP | E906:ALL | 4 | | |
| NC7-68 | PTMW | Tnbs1-Tnbs0 | A | DIS | AS:UISO | 2 | Y | |
| NC7-68 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-68 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-68 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-68 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC7-75 | PTMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| NC7-75 | PTMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC7-75 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC7-75 | PTMW | Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| NC7-75 | PTMW | Tnsc0 | A | CMP | E601:ALL | 2 | Y | |
| NC7-75 | PTMW | Tnsc0 | S | CMP | E906:ALL | 2 | Y | |
| NC7-75 | PTMW | Tnsc0 | S | CMP | E906:ALL | 4 | | |
| NC7-76 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| NC7-76 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| NC7-76 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| NC7-76 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| NC7-76 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-865-01 | PTMW | Tnbs1-Tnbs0 | A | DIS | DWMETALS:ALL | 1 | Y | |
| W-865-01 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-865-01 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 1 | Y | |
| W-865-01 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 1 | Y | |
| W-865-01 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 3 | | |
| W-865-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 1 | Y | |
| W-865-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 3 | | |
| W-865-03 | PTMW | Tnbs1-Tnbs0 | A | DIS | E300.0:NO3 | 1 | Y | |
| W-865-03 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 1 | Y | |
| W-865-03 | PTMW | Tnbs1-Tnbs0 | A | DIS | E906:ALL | 1 | Y | |
| W-865-1804 | PTMW | Tnbs1-Tnbs0 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-865-1804 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 1 | Y | |

**Table 2.5-8 (Con't.). Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-865-1804 | PTMW | Tnbs1-Tnbs0 | A | DIS | E300.0:PERC | 3 | | |
| W-865-1804 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 1 | Y | |
| W-865-1804 | PTMW | Tnbs1-Tnbs0 | S | DIS | E601:ALL | 3 | | |
| W-865-1804 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 1 | Y | |
| W-865-1804 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 3 | | |
| W-PIT3-01 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| W-PIT3-01 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-PIT3-01 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Dry. |
| W-PIT3-01 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| W-PIT3-01 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT3-02 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| W-PIT3-02 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-PIT3-02 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Dry. |
| W-PIT3-02 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| W-PIT3-02 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT5-01 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| W-PIT5-01 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-PIT5-01 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Dry. |
| W-PIT5-01 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| W-PIT5-01 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT5-02 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| W-PIT5-02 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-PIT5-02 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | N | Dry. |
| W-PIT5-02 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| W-PIT5-02 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT7-02 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT7-02 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-02 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-02 | PTMW | Qal/WBR | S | CMP | E906:ALL | 1 | Y | |
| W-PIT7-02 | PTMW | Qal/WBR | S | CMP | E906:ALL | 3 | | |
| W-PIT7-03 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT7-03 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-03 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-03 | PTMW | Qal/WBR | S | CMP | E601:ALL | 2 | Y | |
| W-PIT7-03 | PTMW | Qal/WBR | S | CMP | E601:ALL | 4 | | |
| W-PIT7-03 | PTMW | Qal/WBR | A | CMP | E906:ALL | 1 | Y | |
| W-PIT7-10 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT7-10 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-10 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-10 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| W-PIT7-10 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-10 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT7-11 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | N | Dry. |
| W-PIT7-11 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-PIT7-11 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | N | Dry. |
| W-PIT7-11 | PTMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | N | Dry. |
| W-PIT7-11 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | N | Dry. |
| W-PIT7-11 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-PIT7-12 | PTMW | Tnbs1-Tnbs0 | O | CMP | AS:UISO | 2 | Y | |
| W-PIT7-12 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-12 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-12 | PTMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| W-PIT7-12 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-12 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-PIT7-13 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |

**Table 2.5-8 (Con't.). Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-PIT7-13 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-13 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-13 | PTMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| W-PIT7-13 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-13 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-PIT7-14 | PTMW | Tnsc0 | O | DIS | AS:UISO | 2 | Y | |
| W-PIT7-14 | PTMW | Tnsc0 | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-14 | PTMW | Tnsc0 | A | CMP | E906:ALL | 2 | Y | |
| W-PIT7-14 | PTMW | Tnsc0 | A | DIS | MS:UISO | 2 | Y | |
| W-PIT7-15 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| W-PIT7-15 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-15 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-15 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-15 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-PIT7-15 | PTMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| W-PIT7-1860 | PTMW | Tnbs1-Tnbs0 | E | CMP | E300.0:PERC | 2 | | To be sampled in 2012. |
| W-PIT7-1860 | PTMW | Tnbs1-Tnbs0 | E | CMP | E906:ALL | 2 | | To be sampled in 2012. |
| W-PIT7-1861 | PTMW | Qal/WBR | O | CMP | AS:UISO | 2 | Y | |
| W-PIT7-1861 | PTMW | Qal/WBR | O | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-1861 | PTMW | Qal/WBR | O | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-1861 | PTMW | Qal/WBR | O | CMP | E906:ALL | 2 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | A | DIS | E300.0:O-PO2 | 2 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT7-1918 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 1 | Y | |
| W-PIT7-1918 | PTMW | Qal/WBR | Q | DIS | MS:UISO | 2 | Y | |
| W-PIT7-2141 | PTMW | Tnbs1-Tnbs0 | E | CMP | AS:UISO | 2 | | To be sampled in 2012. |
| W-PIT7-2141 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-2141 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-2141 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-PIT7-2141 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-2141 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-PIT7-2141 | PTMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | A | CMP-TF | AS:UISO | 2 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | A | CMP-TF | E300.0:PERC | 2 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | A | CMP-TF | E601:ALL | 2 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 2 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 4 | | |
| W-PIT7-2305 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 1 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 2 | Y | |
| W-PIT7-2305 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 3 | | |
| W-PIT7-2306 | EW | Qal/WBR | A | CMP-TF | AS:UISO | 2 | N | Inoperable pump. |
| W-PIT7-2306 | EW | Qal/WBR | A | CMP-TF | E300.0:NO3 | 2 | N | Inoperable pump. |
| W-PIT7-2306 | EW | Qal/WBR | A | CMP-TF | E300.0:PERC | 2 | N | Inoperable pump. |
| W-PIT7-2306 | EW | Qal/WBR | A | CMP-TF | E601:ALL | 2 | N | Inoperable pump. |
| W-PIT7-2306 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 2 | N | Inoperable pump. |
| W-PIT7-2306 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 4 | | |
| W-PIT7-2306 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 3 | | |
| W-PIT7-2307 | EW | Qal/WBR | A | CMP-TF | AS:UISO | 2 | Y | |
| W-PIT7-2307 | EW | Qal/WBR | A | CMP-TF | E300.0:NO3 | 2 | Y | |

**Table 2.5-8 (Con't.). Pit 7 Complex Area of Operable Unit 5 ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-PIT7-2307 | EW | Qal/WBR | A | CMP-TF | E300.0:PERC | 2 | Y | |
| W-PIT7-2307 | EW | Qal/WBR | A | CMP-TF | E601:ALL | 2 | Y | |
| W-PIT7-2307 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 2 | Y | |
| W-PIT7-2307 | EW | Qal/WBR | S | CMP-TF | E906:ALL | 4 | | |
| W-PIT7-2307 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 1 | Y | |
| W-PIT7-2307 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 2 | Y | |
| W-PIT7-2307 | EW | Qal/WBR | Q | DIS-TF | KPA:UTOT | 3 | | |
| W-PIT7-2309 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT7-2309 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT7-2309 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 2 | Y | |
| W-PIT7-2309 | PTMW | Qal/WBR | A | CMP | E601:ALL | 2 | Y | |
| W-PIT7-2309 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-PIT7-2309 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT7-2309 | PTMW | Qal/WBR | A | DIS | MS:UISO | 2 | Y | |

**Notes:**

**1) Pit 7 Complex primary COC: tritium (E906).**
**2) Pit 7 Complex secondary COC: nitrate (E300.0:NO3).**
**3) Pit 7 Complex secondary COC: perchlorate (E300.0:PERC)**
**4) Pit 7 Complex secondary COC: uranium (AS:UISO and/or MS:UISO).**
**5) Pit 7 Complex secondary COC: VOCs (E601).**
**6) CMP Detection monitoring analyte: tritium (E906) sampled annually.**
**7) CMP Detection monitoring analyte: VOCs (E601 or E624) sampled annually.**
**8) CMP Detection monitoring analyte: fluoride (E340.2) sampled annually.**
**9) CMP Detection monitoring analyte: HE compounds (E8330) sampled annually.**
**10) CMP Detection monitoring analyte: nitrate (E300.0:NO3) sampled annually.**
**11) CMP Detection monitoring analyte: perchlorate (E300.0:PERC) sampled annually.**
**12) CMP Detection monitoring analytes: Title 26 metals plus Li (T26METALS and E200.8:Li) sampled annually.**
**13) CMP Detection monitoring analytes: uranium isotopes (AS:UISO) sampled annually.**
**14) CMP Detection monitoring analytes: polychlorinated biphenyls (E8082) sampled annually.**
**15) See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.5-9. Pit 7-Source (PIT7-SRC) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | Total Uranium mass removed (g) |
|---|---|---|---|---|---|---|
| PIT7-SRC | January | NA | 0.16 | 0.28 | 1.1 | 0.50 |
| | February | NA | 0.087 | 0.17 | 0.66 | 0.37 |
| | March | NA | 0.051 | 0.17 | 0.64 | 0.50 |
| | April | NA | 0.0042 | 0.11 | 0.36 | 0.31 |
| | May | NA | 0.0060 | 0.15 | 0.47 | 0.27 |
| | June | NA | 0.0050 | 0.13 | 0.40 | 0.23 |
| Total | | NA | 0.31 | 1.0 | 3.6 | 2.2 |

**Table 2.6-1. Building 854-Source (854-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 854-SRC | January | 0 | 821 | 0 | 126,491 |
| | February | 0 | 444 | 0 | 65,781 |
| | March | 0 | 862 | 0 | 110,132 |
| | April | 0 | 671 | 0 | 98,656 |
| | May | 1 | 792 | 0 | 99,213 |
| | June | 172 | 694 | 483 | 82,174 |
| Total | | 173 | 4,284 | 483 | 582,447 |

**Table 2.6-2. Building 854-Proximal (854-PRX) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 854-PRX | January | NA | 0 | NA | 0 |
| | February | NA | 2 | NA | 81 |
| | March | NA | 0 | NA | 0 |
| | April | NA | 33 | NA | 1,892 |
| | May | NA | 488 | NA | 28,506 |
| | June | NA | 692 | NA | 39,495 |
| Total | | NA | 1,215 | NA | 69,974 |

**Table 2.6-3. Building 854-Distal (854-DIS) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 854-DIS | January | NA | 0 | NA | 0 |
| | February | NA | 15 | NA | 764 |
| | March | NA | 18 | NA | 900 |
| | April | NA | 15 | NA | 1,024 |
| | May | NA | 18 | NA | 1,109 |
| | June | NA | 16 | NA | 1,012 |
| Total | | NA | 82 | NA | 4,809 |

**Table 2.6-4. Building 854 Operable Unit volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Building 854-Distal*** [a] | | | | | | | | | | | | | | | |
| 854-DIS-GWTS-E | 2/8/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-DIS-GWTS-E | 3/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-DIS-GWTS-E | 4/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-DIS-GWTS-E | 5/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-DIS-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-DIS-GWTS-I | 2/8/11 | 31 | <0.5 | 0.7 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-DIS-GWTS-I | 4/4/11 | 35 | <0.5 | 0.69 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-DIS-GWTS-I | 4/4/11 DUP | 36 | <0.5 | 0.72 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| ***Building 854-Proximal*** [b] | | | | | | | | | | | | | | | |
| 854-PRX-GWTS-E | 4/18/11 | <0.5 L | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-PRX-GWTS-E | 5/9/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-PRX-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-PRX-GWTS-I | 4/4/11 | 15 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-PRX-GWTS-I | 4/4/11 DUP | 18 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-PRX-GWTS-I | 5/9/11 | 15 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| ***Building 854-Source*** | | | | | | | | | | | | | | | |
| 854-SRC-GWTS-E | 1/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-SRC-GWTS-E | 2/14/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-SRC-GWTS-E | 3/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-SRC-GWTS-E | 4/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-SRC-GWTS-E | 5/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

**Table 2.6-4 (Con't.). Building 854 Operable Unit volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Building 854-Source continued*** | | | | | | | | | | | | | | | |
| 854-SRC-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-SRC-GWTS-I | 1/4/11 | 47 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 J |
| 854-SRC-GWTS-I | 4/4/11 | 55 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 854-SRC-GWTS-I | 4/4/11 DUP | 55 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

**Notes:**

[a] **No samples collected in January due to GWTS shut down for freeze protection.**

[b] **No samples collected in January thru March due to GWTS shut down for freeze protection.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.6-4 (Con't.). Analyte detected but not reported in main table.**

| Location | Date | Detection frequency |
|---|---|---|
| ***Building 854-Distal[a]*** | | **0 of 18** |
| **854-DIS-GWTS-E** | **2/8/11** | **0 of 18** |
| **854-DIS-GWTS-E** | **3/7/11** | **0 of 18** |
| **854-DIS-GWTS-E** | **4/4/11** | **0 of 18** |
| **854-DIS-GWTS-E** | **5/4/11** | **0 of 18** |
| **854-DIS-GWTS-E** | **6/6/11** | **0 of 18** |
| **854-DIS-GWTS-I** | **2/8/11** | **0 of 18** |
| **854-DIS-GWTS-I** | **4/4/11** | **0 of 18** |
| **854-DIS-GWTS-I** | **4/4/11 DUP** | **0 of 18** |
| ***Building 854-Proximal[b]*** | | |
| **854-PRX-GWTS-E** | **4/18/11** | **0 of 18** |
| **854-PRX-GWTS-E** | **5/9/11** | **0 of 18** |
| **854-PRX-GWTS-E** | **6/6/11** | **0 of 18** |
| **854-PRX-GWTS-I** | **4/4/11** | **0 of 18** |
| **854-PRX-GWTS-I** | **04/04/11 DUP** | **0 of 18** |
| **854-PRX-GWTS-I** | **5/9/11** | **0 of 18** |
| ***Building 854-Source*** | | |
| **854-SRC-GWTS-E** | **1/4/11** | **0 of 18** |
| **854-SRC-GWTS-E** | **2/14/11** | **0 of 18** |
| **854-SRC-GWTS-E** | **3/7/11** | **0 of 18** |
| **854-SRC-GWTS-E** | **4/4/11** | **0 of 18** |
| **854-SRC-GWTS-E** | **5/4/11** | **0 of 18** |
| **854-SRC-GWTS-E** | **6/6/11** | **0 of 18** |
| **854-SRC-GWTS-I** | **1/4/11** | **0 of 18** |
| **854-SRC-GWTS-I** | **4/4/11** | **0 of 18** |
| **854-SRC-GWTS-I** | **04/04/11 DUP** | **0 of 18** |

**Notes:**

[a] **No samples collected in January due to GWTS shut down for freeze protection.**

[b] **No samples collected in January thru March due to GWTS shut down for freeze protection.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.6-5. Building 854 Operable Unit nitrate and perchlorate in ground water treatment system influent and effluent.**

| Location | Date | Nitrate (as NO3) (mg/L) | Perchlorate (µg/L) |
|---|---|---|---|
| ***Building 854-Distal***[a] | | | |
| 854-DIS-GWTS-E | 2/8/11 | 0.94 | <4 |
| 854-DIS-GWTS-E | 3/7/11 | 7.6 | <4 |
| 854-DIS-GWTS-E | 4/4/11 | 3.6 | <4 |
| 854-DIS-GWTS-E | 5/4/11 | 5.4 | <4 |
| 854-DIS-GWTS-E | 6/6/11 | 5.7 | <4 |
| 854-DIS-GWTS-I | 2/8/11 | 22 | 6.6 |
| 854-DIS-GWTS-I | 4/4/11 | 22 | 5.6 |
| 854-DIS-GWTS-I | 4/4/11 DUP | 21 | 4.8 |
| ***Building 854-Proximal***[b] | | | |
| 854-PRX-GWTS-E | 4/18/11 | <1 D | <4 |
| 854-PRX-GWTS-E | 5/9/11 | <0.5 | <4 |
| 854-PRX-GWTS-E | 6/6/11 | <0.5 | <4 |
| 854-PRX-GWTS-I | 4/4/11 | 39 | 12 |
| 854-PRX-GWTS-I | 4/4/11 DUP | 32 DL | 9.9 |
| 854-PRX-GWTS-I | 5/9/11 | 41 | 12 |
| 854-PRX-GWTS-I | 6/6/11 | 39 | NM |
| ***Building 854-Source*** | | | |
| 854-SRC-GWTS-E | 1/4/11 | NR | <4 |
| 854-SRC-GWTS-E | 2/14/11 | NR | <4 |
| 854-SRC-GWTS-E | 3/7/11 | NR | <4 |
| 854-SRC-GWTS-E | 4/4/11 | NR | <4 |
| 854-SRC-GWTS-E | 5/4/11 | NR | <4 |
| 854-SRC-GWTS-E | 6/6/11 | NR | <4 |
| 854-SRC-GWTS-I | 1/4/11 | NR | <4 |
| 854-SRC-GWTS-I | 4/4/11 | NR | <4 |
| 854-SRC-GWTS-I | 4/4/11 DUP | NR | <4 |

**Notes:**

[a] **No samples collected in January due to GWTS shut down for freeze protection.**

[b] **No samples collected in January thru March due to GWTS shut down for freeze protection.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.6-6. Building 854 Operable Unit treatment facility sampling and analysis plan.**

| Sample location | Sample identification | Parameter | Frequency |
|---|---|---|---|
| ***854-SRC GWTS*** | | | |
| Influent Port | 854-SRC-I | VOCs | Quarterly |
| | | Perchlorate | Quarterly |
| | | pH | Quarterly |
| Effluent Port | 854-SRC-E | VOCs | Monthly |
| | | Perchlorate | Monthly |
| | | pH | Monthly |
| ***854-SRC SVTS*** | | | |
| Influent Port | W-854-1834-854-SRC-VI | No Monitoring Requirements | |
| Effluent Port | 854-SRC-E | VOCs | Weekly[a] |
| Intermediate GAC | 854-SRC-VCF3I | VOCs | Weekly[a] |
| ***854-PRX GWTS*** | | | |
| Influent Port | W-854-03-854-PRX-I | VOCs | Quarterly |
| | | Perchlorate | Quarterly |
| | | Nitrate | Quarterly |
| | | pH | Quarterly |
| Effluent Port | 854-PRX-BTU-I | VOCs | Monthly |
| Effluent Port | 854-PRX-E | Perchlorate | Monthly |
| | | Nitrate | Monthly |
| | | pH | Monthly |
| ***854-DIS GWTS*** | | | |
| Influent Port | W-854-2139-854-DIS-I | VOCs | Quarterly |
| | | Perchlorate | Quarterly |
| | | Nitrate | Quarterly |
| | | pH | Quarterly |
| Effluent Port | 854-DIS-E | VOCs | Monthly |
| | | Perchlorate | Monthly |
| | | Nitrate | Monthly |
| | | pH | Monthly |

**Notes:**

[a] **Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.**

**One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.6-7. Building 854 Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-854-01 | PTWM | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-01 | PTWM | Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-01 | PTWM | Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-01 | PTWM | Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-01 | PTWM | Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-02 | EW | Tnbs1-Tnsc0 | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 1 | Y | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 2 | Y | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 3 | | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 4 | | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 3 | | |
| W-854-02 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 4 | | |
| W-854-03 | EW | Tnbs1-Tnsc0 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | A | DIS-TF | E300.0:NO3 | 2 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | A | DIS-TF | E300.0:NO3 | 2 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | A | DIS-TF | E300.0:NO3 | 2 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 1 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 2 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 3 | | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 4 | | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 3 | | |
| W-854-03 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 4 | | |
| W-854-04 | PTWM | Tmss | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-04 | PTWM | Tmss | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-04 | PTWM | Tmss | S | CMP | E300.0:PERC | 4 | | |
| W-854-04 | PTWM | Tmss | S | CMP | E601:ALL | 2 | Y | |
| W-854-04 | PTWM | Tmss | S | CMP | E601:ALL | 4 | | |
| W-854-05 | PTWM | Qls-Tnbs1 | A | CMP | E300.0:NO3 | 2 | N | Inoperable pump. |
| W-854-05 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 2 | N | Inoperable pump. |
| W-854-05 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 4 | | |
| W-854-05 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 2 | N | Inoperable pump. |
| W-854-05 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-854-06 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-06 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-06 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-06 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-06 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-07 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-07 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-07 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-07 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-07 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-08 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-08 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-08 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-08 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-08 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-09 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-09 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-09 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-09 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |

**Table 2.6-7 (Con't.). Building 854 Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-854-09 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-10 | PTWM | Qls-Tnbs1 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-10 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-10 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 4 | | |
| W-854-10 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-854-10 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-854-11 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-854-11 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | N | Dry. |
| W-854-11 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-11 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | N | Dry. |
| W-854-11 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-12 | PTWM | Tmss | A | CMP | E300.0:NO3 | 2 | N | Insufficient water. |
| W-854-12 | PTWM | Tmss | S | CMP | E300.0:PERC | 2 | N | Insufficient water. |
| W-854-12 | PTWM | Tmss | S | CMP | E300.0:PERC | 4 | | |
| W-854-12 | PTWM | Tmss | S | CMP | E601:ALL | 2 | N | Insufficient water. |
| W-854-12 | PTWM | Tmss | S | CMP | E601:ALL | 4 | | |
| W-854-13 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-13 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-13 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-13 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-13 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-14 | PTWM | Qls-Tnbs1 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-14 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-14 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 4 | | |
| W-854-14 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-854-14 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-854-15 | PTWM | Qls-Tnbs1 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-15 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-15 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 4 | | |
| W-854-15 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 2 | Y | |
| W-854-15 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-854-17 | EW | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-17 | EW | Tnbs1-Tnsc0 | S | DIS | E300.0:PERC | 1 | Y | |
| W-854-17 | EW | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-17 | EW | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-17 | EW | Tnbs1-Tnsc0 | S | DIS | E601:ALL | 1 | Y | |
| W-854-17 | EW | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-17 | EW | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-18A | EW | Tnbs1-Tnsc0 | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 1 | Y | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 2 | Y | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 3 | | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 4 | | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 3 | | |
| W-854-18A | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 4 | | |
| W-854-19 | PTWM | Qls-Tnbs1 | O | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-854-19 | PTWM | Qls-Tnbs1 | O | CMP | E300.0:PERC | 2 | N | Dry. |
| W-854-19 | PTWM | Qls-Tnbs1 | O | CMP | E601:ALL | 2 | N | Dry. |
| W-854-1701 | PTWM | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-1701 | PTWM | Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-1701 | PTWM | Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-1701 | PTWM | Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-1701 | PTWM | Tnsc0 | S | CMP | E601:ALL | 4 | | |

**Table 2.6-7 (Con't.). Building 854 Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-854-1706 | PTWM | Qls-Tnbs1 | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-854-1706 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 2 | N | Dry. |
| W-854-1706 | PTWM | Qls-Tnbs1 | S | CMP | E300.0:PERC | 4 | | |
| W-854-1706 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 2 | N | Dry. |
| W-854-1706 | PTWM | Qls-Tnbs1 | S | CMP | E601:ALL | 4 | | |
| W-854-1707 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-1707 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-1707 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-1707 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-1707 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-1731 | PTWM | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-1731 | PTWM | Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-1731 | PTWM | Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-1731 | PTWM | Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-1731 | PTWM | Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-1822 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-1822 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-1822 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-1822 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-1822 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-1823 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-1823 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-1823 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-1823 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-1823 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-1902 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-1902 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-1902 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-1902 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-1902 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-2115 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-2115 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-2115 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-2115 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-2115 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | A | DIS-TF | E300.0:NO3 | 1 | Y | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 1 | Y | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 2 | Y | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 3 | | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 4 | | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 3 | | |
| W-854-2139 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 4 | | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | A | CMP-TF | E300.0:NO3 | 2 | Y | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 1 | Y | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 2 | Y | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E300.0:PERC | 3 | | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E300.0:PERC | 4 | | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 1 | Y | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 2 | Y | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | DIS-TF | E601:ALL | 3 | | |
| W-854-2218 | EW | Tnbs1-Tnsc0 | S | CMP-TF | E601:ALL | 4 | | |
| W-854-2611 | PTMW | Tnbs1/Tnsc0 | A | CMP | E300.0:NO3 | 2 | N | Insufficient water. |

**Table 2.6-7 (Con't.). Building 854 Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-854-2611 | PTMW | Tnbs1/Tnsc0 | S | CMP | E300.0:PERC | 2 | N | Insufficient water. |
| W-854-2611 | PTMW | Tnbs1/Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-2611 | PTMW | Tnbs1/Tnsc0 | S | CMP | E601:ALL | 2 | N | Insufficient water. |
| W-854-2611 | PTMW | Tnbs1/Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-45 | PTWM | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-854-45 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-854-45 | PTWM | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| W-854-45 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| W-854-45 | PTWM | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| W-854-F2 | PTWM | Qls-Tnbs1 | O | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-854-F2 | PTWM | Qls-Tnbs1 | O | CMP | E300.0:PERC | 2 | N | Dry. |
| W-854-F2 | PTWM | Qls-Tnbs1 | O | CMP | E601:ALL | 2 | N | Dry. |
| SPRING10 | SPR | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| SPRING10 | SPR | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| SPRING10 | SPR | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| SPRING10 | SPR | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| SPRING10 | SPR | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |
| SPRING11 | SPR | Tnbs1-Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| SPRING11 | SPR | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 2 | Y | |
| SPRING11 | SPR | Tnbs1-Tnsc0 | S | CMP | E300.0:PERC | 4 | | |
| SPRING11 | SPR | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 2 | Y | |
| SPRING11 | SPR | Tnbs1-Tnsc0 | S | CMP | E601:ALL | 4 | | |

**Notes:**

**1) Building 854 primary Contaminants of Concern in Ground Water: VOCs (E601 or E624) and perchlorate (E300.0:PERC ).**

**2) Building 854 secondary COC: nitrate (E300:NO3).**

**3) See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.6-8. Building 854-Source (854-SRC) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 854-SRC | January | 0 | 20 | 0.84 | 23 | NA | NA |
| | February | 0 | 11 | 0.51 | 12 | NA | NA |
| | March | 0 | 18 | 0.77 | 20 | NA | NA |
| | April | 0 | 18 | 1.0 | 17 | NA | NA |
| | May | 0.0075 | 16 | 0.94 | 17 | NA | NA |
| | June | 31 | 14 | 0.82 | 14 | NA | NA |
| Total | | 31 | 98 | 4.9 | 100 | NA | NA |

**Table 2.6-9. Building 854-Proximal (854-PRX) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 854-PRX | January | NA | 0 | 0 | 0 | NA | NA |
| | February | NA | 0.0029 | 0.0034 | 0.013 | NA | NA |
| | March | NA | 0 | 0 | 0 | NA | NA |
| | April | NA | 0.13 | 0.086 | 0.28 | NA | NA |
| | May | NA | 1.6 | 1.3 | 4.4 | NA | NA |
| | June | NA | 2.2 | 1.8 | 5.8 | NA | NA |
| Total | | NA | 4.0 | 3.2 | 11 | NA | NA |

**Table 2.6-10. Building 854-Distal (854-DIS) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 854-DIS | January | NA | 0 | 0 | 0 | NA | NA |
| | February | NA | 0.092 | 0.019 | 0.064 | NA | NA |
| | March | NA | 0.11 | 0.023 | 0.075 | NA | NA |
| | April | NA | 0.14 | 0.022 | 0.085 | NA | NA |
| | May | NA | 0.15 | 0.024 | 0.092 | NA | NA |
| | June | NA | 0.14 | 0.022 | 0.084 | NA | NA |
| Total | | NA | 0.64 | 0.11 | 0.40 | NA | NA |

**Table 2.7-1. Building 832-Source (832-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of ft$^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 832-SRC | January | 0 | 0 | 0 | 0 |
| | February | 0 | 481 | 0 | 6,768 |
| | March | 96 | 420 | 23 | 9,225 |
| | April | 648 | 648 | 109 | 16,838 |
| | May | 806 | 816 | 154 | 15,858 |
| | June | 696 | 696 | 110 | 12,125 |
| Total | | 2,246 | 3,061 | 396 | 60,814 |

**Table 2.7-2. Building 830-Source (830-SRC) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of ft$^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 830-SRC | January | 0 | 280 | 0 | 203,954 |
| | February | 0 | 416 | 0 | 177,785 |
| | March | 0 | 320 | 0 | 135,149 |
| | April | 4 | 4 | 5 | 693 |
| | May | 96 | 253 | 146 | 60,668 |
| | June | 177 | 460 | 282 | 156,741 |
| Total | | 277 | 1,733 | 433 | 734,990 |

**Table 2.7-3. Building 830-Distal South (830-DISS) volumes of ground water and soil vapor extracted and discharged, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS Operational hours | GWTS Operational hours | Volume of vapor extracted (thousands of $ft^3$) | Volume of ground water discharged (gal) |
|---|---|---|---|---|---|
| 830-DISS | January | NA | 0 | NA | 0 |
| | February | NA | 624 | NA | 130,489 |
| | March | NA | 744 | NA | 161,338 |
| | April | NA | 672 | NA | 141,650 |
| | May | NA | 792 | NA | 163,096 |
| | June | NA | 696 | NA | 142,110 |
| Total | | NA | 3,528 | NA | 738,683 |

**Table 2.7-4. Building 832 Canyon Opreable Unit volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

| Location | Date | TCE (µg/L) | PCE (µg/L) | cis-1,2-DCE (µg/L) | trans-1,2-DCE (µg/L) | Carbon tetra-chloride (µg/L) | Chloro-form (µg/L) | 1,1-DCA (µg/L) | 1,2-DCA (µg/L) | 1,1-DCE (µg/L) | 1,1,1-TCA (µg/L) | 1,1,2-TCA (µg/L) | Freon 11 (µg/L) | Freon 113 (µg/L) | Vinyl chloride (µg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Building 830-Distal South*[a]** | | | | | | | | | | | | | | | |
| ***Building 830-Source*** | | | | | | | | | | | | | | | |
| 830-SRC-GWTS-E | 1/4/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 830-SRC-GWTS-E | 2/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 830-SRC-GWTS-E | 3/14/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 830-SRC-GWTS-E | 4/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 830-SRC-GWTS-E | 5/23/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 830-SRC-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 830-SRC-GWTS-I | 2/7/11 | 1,000 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D | <2.5 D |
| 830-SRC-GWTS-I | 4/6/11 | 850 D | 0.84 | 1.9 | <0.5 | <0.5 | 0.51 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 830-SRC-GWTS-I | 4/6/11 DUP | 821 D | 0.9 | 1.6 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| ***Building 832-Source*[b]** | | | | | | | | | | | | | | | |
| 832-SRC-GWTS-E | 2/7/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 832-SRC-GWTS-E | 3/14/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 832-SRC-GWTS-E | 4/11/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 832-SRC-GWTS-E | 5/10/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 832-SRC-GWTS-E | 6/6/11 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 832-SRC-GWTS-I | 2/7/11 | 140 D | <0.5 | 4.1 | <0.5 | <0.5 | 0.58 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 832-SRC-GWTS-I | 4/11/11 | 57 | <0.5 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 832-SRC-GWTS-I | 4/11/11 DUP | 56 | <0.5 | 1.3 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

**Notes appear on the following page.**

**Table 2.7-4 (Con't.). Building 832 Canyon Opreable Unit volatile organic compounds (VOCs) in ground water treatment system influent and effluent.**

**Notes:**

[a] **No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.**

[b] **No compliance monitoring conducted in January due to shut down of GWTS for freeze protection.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.7-4 (Con't.). Analyte detected but not reported in main table.**

| Location | Date | Detection frequency | 1,2-DCE (Total) (µg/l) | Methylene Chloride (µg/L) |
|---|---|---|---|---|
| ***Building 830-Distal South[a]*** | | | | |
| ***Building 830-Source*** | | | | |
| 830-SRC-GWTS-E | 1/4/11 | 0 of 18 | – | – |
| 830-SRC-GWTS-E | 2/7/11 | 0 of 18 | – | – |
| 830-SRC-GWTS-E | 3/14/11 | 0 of 18 | – | – |
| 830-SRC-GWTS-E | 4/6/11 | 0 of 18 | – | – |
| 830-SRC-GWTS-E | 5/23/11 | 0 of 18 | – | – |
| 830-SRC-GWTS-E | 6/6/11 | 0 of 18 | – | – |
| 830-SRC-GWTS-I | 2/7/11 | 0 of 18 | – | – |
| 830-SRC-GWTS-I | 4/6/11 | 2 of 18 | – | 1.3 |
| 830-SRC-GWTS-I | 4/6/11 DUP | 2 of 18 | 1 | 0.6 |
| ***Building 832-Source[b]*** | | | | |
| 832-SRC-GWTS-E | 2/7/11 | 0 of 18 | – | – |
| 832-SRC-GWTS-E | 3/14/11 | 0 of 18 | – | – |
| 832-SRC-GWTS-E | 4/11/11 | 0 of 18 | – | – |
| 832-SRC-GWTS-E | 5/10/11 | 0 of 18 | – | – |
| 832-SRC-GWTS-E | 6/6/11 | 0 of 18 | – | – |
| 832-SRC-GWTS-I | 2/7/11 | 1 of 18 | – | – |
| 832-SRC-GWTS-I | 4/11/11 | 1 of 18 | 4 | – |
| 832-SRC-GWTS-I | 04/11/11 DUP | 1 of 18 | 4.5 | – |

**Notes:**

[a] **No influent or effluent monitoring conducted due to VOC treatment at CGSA GWTS.**

[b] **No compliance monitoring conducted in January due to shut down of GWTS for freeze protection.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.7-5. Building 832 Canyon Operable Unit perchlorate in ground water treatment system influent and effluent.**

| Location | Date | Perchlorate (µg/L) |
|---|---|---|
| ***Building 830-Distal South*** | | |
| 830-DISS-GWTS-E | 1/4/11 | <4 |
| 830-DISS-GWTS-E | 2/8/11 | <4 |
| 830-DISS-GWTS-E | 3/7/11 | <4 |
| 830-DISS-GWTS-E | 4/7/11 | <4 |
| 830-DISS-GWTS-E | 5/9/11 | <4 |
| 830-DISS-GWTS-E | 6/6/11 | <4 |
| 830-DISS-GWTS-I | 1/4/11 | 4.3 |
| 830-DISS-GWTS-I | 4/7/11 | <4 |
| 830-DISS-GWTS-I | 4/7/11 DUP | <4 |
| ***Building 830-Source*** | | |
| 830-SRC-GWTS-E | 1/4/11 | <4 |
| 830-SRC-GWTS-E | 2/7/11 | <4 |
| 830-SRC-GWTS-E | 3/14/11 | <4 |
| 830-SRC-GWTS-E | 4/6/11 | <4 |
| 830-SRC-GWTS-E | 5/23/11 | <4 |
| 830-SRC-GWTS-E | 6/6/11 | <4 |
| 830-SRC-GWTS-I | 2/7/11 | 6.3 |
| 830-SRC-GWTS-I | 4/6/11 | 5.5 |
| 830-SRC-GWTS-I | 4/6/11 DUP | 5.6 |
| ***Building 832-Source***[a] | | |
| 832-SRC-GWTS-E | 2/7/11 | <4 |
| 832-SRC-GWTS-E | 3/14/11 | <4 |
| 832-SRC-GWTS-E | 4/11/11 | <4 |
| 832-SRC-GWTS-E | 5/10/11 | <4 |
| 832-SRC-GWTS-E | 6/6/11 | <4 |
| 832-SRC-GWTS-I | 2/7/11 | 7.6 |
| 832-SRC-GWTS-I | 4/11/11 | 5.4 |
| 832-SRC-GWTS-I | 4/11/11 DUP | 5.3 |

**Notes:**

[a] **No compliance monitoring conducted in January due to shut down of GWTS for freeze protection.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.7-6. Building 832 Canyon Operable Unit treatment facility sampling and analysis plan.**

| Sample location | Sample identification | Parameter | Frequency |
|---|---|---|---|
| ***832-SRC GWTS*** | | | |
| **Influent Port** | **832-SRC-I** | **VOCs** | **Quarterly** |
| | | **Perchlorate** | **Quarterly** |
| | | **pH** | **Quarterly** |
| **Effluent Port** | **832-SRC-E** | **VOCs** | **Monthly** |
| | | **Perchlorate** | **Monthly** |
| | | **PH** | **Monthly** |
| ***832-SRC SVTS*** | | | |
| **Influent Port** | **832-SRC-VI** | **No Monitoring Requirements** | |
| **Effluent Port** | **832-SRC-VE** | **VOCs** | **Weekly**[a] |
| **Intermediate GAC** | **832-SRC-VCF3I** | **VOCs** | **Weekly**[a] |
| ***830-SRC GWTS*** | | | |
| **Influent Port** | **830-SRC-I** | **VOCs** | **Quarterly** |
| | | **Perchlorate** | **Quarterly** |
| | | **PH** | **Quarterly** |
| **Effluent Port** | **830-SRC-E** | **VOCs** | **Monthly** |
| | | **Perchlorate** | **Monthly** |
| | | **PH** | **Monthly** |
| ***830-SRC SVTS*** | | | |
| **Influent Port** | **830-SRC-VI** | **No Monitoring Requirements** | |
| **Effluent Port** | **830-SRC-VE** | **VOCs** | **Weekly**[a] |
| **Intermediate GAC** | **830-SRC-VCF3I** | **VOCs** | **Weekly**[a] |
| ***830-DISS GWTS*** | | | |
| **Influent Port** | **830-DISS-I** | **Perchlorate** | **Quarterly** |
| | | **pH** | **Quarterly** |
| **Effluent Port** | **830-DISS-E** | **Perchlorate** | **Monthly** |
| | | **pH** | **Monthly** |

**Notes:**

[a] **Weekly monitoring for VOCs will consist of the use of a flame-ionization detector, photo-ionization detector, or other District-approved VOC detection device.**

**One duplicate and one blank (given fictitious labels) shall be taken for every 12 samples.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.7-7. Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-830-04A | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-04A | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-04A | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-04A | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-05 | PTMW | Tnsc1c | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-05 | PTMW | Tnsc1c | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-05 | PTMW | Tnsc1c | S | CMP | E601:ALL | 1 | Y | |
| W-830-05 | PTMW | Tnsc1c | S | CMP | E601:ALL | 3 | | |
| W-830-07 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-830-07 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-830-07 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | N | Dry. |
| W-830-07 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-830-09 | PTMW | UTnbs1 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-830-09 | PTMW | UTnbs1 | O | CMP | E300.0:PERC | 1 | Y | |
| W-830-09 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-830-09 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-830-10 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-10 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-10 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-10 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-11 | PTMW | Tnsc1c | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-11 | PTMW | Tnsc1c | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-11 | PTMW | Tnsc1c | S | CMP | E601:ALL | 1 | Y | |
| W-830-11 | PTMW | Tnsc1c | S | CMP | E601:ALL | 3 | | |
| W-830-12 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-830-12 | GW | LTnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| W-830-12 | GW | LTnbs1 | S | CMP | E300.0:PERC | 1 | Y | |
| W-830-12 | GW | LTnbs1 | S | CMP | E300.0:PERC | 3 | | |
| W-830-12 | GW | LTnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| W-830-12 | GW | LTnbs1 | Q | CMP | E601:ALL | 2 | N | Inoperable pump. |
| W-830-12 | GW | LTnbs1 | Q | CMP | E601:ALL | 3 | | |
| W-830-12 | GW | LTnbs1 | Q | CMP | E601:ALL | 4 | | |
| W-830-13 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | N | Inoperable pump. |
| W-830-13 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | N | Inoperable pump. |
| W-830-13 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | N | Inoperable pump. |
| W-830-13 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-830-13 | PTMW | Tnbs2 | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-830-14 | PTMW | Tnsc1b | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-830-14 | PTMW | Tnsc1b | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-830-14 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-14 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-15 | GW | UTnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-830-15 | GW | UTnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| W-830-15 | GW | UTnbs1 | S | CMP | E300.0:PERC | 1 | Y | |
| W-830-15 | GW | UTnbs1 | S | CMP | E300.0:PERC | 3 | | |
| W-830-15 | GW | UTnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| W-830-15 | GW | UTnbs1 | Q | CMP | E601:ALL | 2 | Y | |
| W-830-15 | GW | UTnbs1 | Q | CMP | E601:ALL | 3 | | |
| W-830-15 | GW | UTnbs1 | Q | CMP | E601:ALL | 4 | | |
| W-830-16 | PTMW | Tnsc1b | O | CMP | E300.0:NO3 | 1 | Y | |
| W-830-16 | PTMW | Tnsc1b | O | CMP | E300.0:PERC | 1 | Y | |
| W-830-16 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-16 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-17 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-17 | PTMW | Tnbs2 | A | CMP | E300.0:PERC | 1 | Y | |

**Table 2.7-7 (Con't.). Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-830-17 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-830-17 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| W-830-18 | PTMW | UTnbs1 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-830-18 | PTMW | UTnbs1 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-830-18 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-830-18 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-830-19 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-19 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-19 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-19 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-19 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-19 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-830-19 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-830-20 | PTMW | UTnbs1 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-830-20 | PTMW | UTnbs1 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-830-20 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-830-20 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-830-21 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-21 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-21 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-21 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-22 | PTMW | Tnsc1a | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-22 | PTMW | Tnsc1a | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-22 | PTMW | Tnsc1a | S | CMP | E601:ALL | 1 | Y | |
| W-830-22 | PTMW | Tnsc1a | S | CMP | E601:ALL | 3 | | |
| W-830-25 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-830-25 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-830-25 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | N | Dry. |
| W-830-25 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-26 | PTMW | UTnbs1 | E | CMP | E300.0:NO3 | 1 | | To be sampled in 2012. |
| W-830-26 | PTMW | UTnbs1 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-830-26 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | N | Dry. |
| W-830-26 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-830-27 | PTMW | Tnsc1a | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-27 | PTMW | Tnsc1a | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-27 | PTMW | Tnsc1a | S | CMP | E601:ALL | 1 | Y | |
| W-830-27 | PTMW | Tnsc1a | S | CMP | E601:ALL | 3 | | |
| W-830-28 | PTMW | UTnbs1 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-830-28 | PTMW | UTnbs1 | O | CMP | E300.0:PERC | 1 | Y | |
| W-830-28 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-830-28 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-830-29 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-29 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-29 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-830-29 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-830-30 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-30 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-30 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| W-830-30 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-830-34 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-34 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-34 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| W-830-34 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-830-34 | PTMW | Qal/WBR | E | CMP | E8330LOW:ALL | 1 | | To be sampled in 2012. |
| W-830-49 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |

**Table 2.7-7 (Con't.). Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-830-49 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-49 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-49 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-49 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-49 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-830-49 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-830-50 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-50 | PTMW | Tnsc1b | O | CMP | E300.0:PERC | 1 | Y | |
| W-830-50 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-50 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-51 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-51 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-51 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-51 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-51 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-51 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-830-51 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-830-52 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-52 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-52 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-52 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-52 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-830-53 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-53 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-53 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-53 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-53 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-830-54 | PTMW | Tnsc1c | O | CMP | E300.0:NO3 | 1 | Y | |
| W-830-54 | PTMW | Tnsc1c | O | CMP | E300.0:PERC | 1 | Y | |
| W-830-54 | PTMW | Tnsc1c | S | CMP | E601:ALL | 1 | Y | |
| W-830-54 | PTMW | Tnsc1c | S | CMP | E601:ALL | 3 | | |
| W-830-55 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-55 | PTMW | Tnsc1b | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-830-55 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-55 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-56 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-56 | PTMW | Tnsc1b | O | CMP | E300.0:PERC | 1 | Y | |
| W-830-56 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-56 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-57 | EW | UTnbs1 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-57 | EW | UTnbs1 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-57 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-57 | EW | UTnbs1 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-57 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 3 | | |
| W-830-57 | EW | UTnbs1 | S | DIS-TF | E601:ALL | 4 | | |
| W-830-58 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-58 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-58 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-58 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-59 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-59 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-59 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-59 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-59 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-59 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |

Table 2.7-7 (Con't.). Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-830-59 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-830-60 | EW | UTnbs1 | A | CMP-TF | E300.0:NO3 | 1 | N | Inoperable pump. |
| W-830-60 | EW | UTnbs1 | A | CMP-TF | E300.0:PERC | 1 | N | Inoperable pump. |
| W-830-60 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 1 | N | Inoperable pump. |
| W-830-60 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 3 | | |
| W-830-1730 | GW | Tnsc1b | S | CMP | E300.0:NO3 | 1 | Y | |
| W-830-1730 | GW | Tnsc1b | S | CMP | E300.0:NO3 | 3 | | |
| W-830-1730 | GW | Tnsc1b | S | CMP | E300.0:PERC | 1 | Y | |
| W-830-1730 | GW | Tnsc1b | S | CMP | E300.0:PERC | 3 | | |
| W-830-1730 | GW | Tnsc1b | Q | CMP | E601:ALL | 1 | Y | |
| W-830-1730 | GW | Tnsc1b | Q | CMP | E601:ALL | 2 | Y | |
| W-830-1730 | GW | Tnsc1b | Q | CMP | E601:ALL | 3 | | |
| W-830-1730 | GW | Tnsc1b | Q | CMP | E601:ALL | 4 | | |
| W-830-1807 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-1807 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-1807 | EW | Qal/WBR-Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-1807 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-1807 | EW | Qal/WBR-Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-1807 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-830-1807 | EW | Qal/WBR-Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-830-1829 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-1829 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-1829 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-1829 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-1830 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-1830 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-1830 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-1830 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-1831 | PTMW | Tnsc1b | O | CMP | E300.0:NO3 | 1 | Y | |
| W-830-1831 | PTMW | Tnsc1b | O | CMP | E300.0:PERC | 1 | Y | |
| W-830-1831 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-830-1831 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-1832 | PTMW | UTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-830-1832 | PTMW | UTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-830-1832 | PTMW | UTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-830-1832 | PTMW | UTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-830-2213 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | N | Insufficient water. |
| W-830-2213 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | N | Insufficient water. |
| W-830-2213 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-830-2213 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-830-2214 | EW | Tnsc1a | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-2214 | EW | Tnsc1a | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-2214 | EW | Tnsc1a | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-2214 | EW | Tnsc1a | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-2214 | EW | Tnsc1a | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-2214 | EW | Tnsc1a | S | CMP-TF | E601:ALL | 3 | | |
| W-830-2214 | EW | Tnsc1a | S | DIS-TF | E601:ALL | 4 | | |
| W-830-2215 | EW | UTnbs1 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-2215 | EW | UTnbs1 | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-830-2215 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-2215 | EW | UTnbs1 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-2215 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 3 | | |
| W-830-2215 | EW | UTnbs1 | S | DIS-TF | E601:ALL | 4 | | |
| W-830-2216 | EW | Tnbs2 | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-830-2216 | EW | Tnbs2 | A | CMP-TF | E300.0:PERC | 1 | Y | |

**Table 2.7-7 (Con't.). Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-830-2216 | EW | Tnbs2 | A | DIS-TF | E300.0:PERC | 3 | | |
| W-830-2216 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 1 | Y | |
| W-830-2216 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 2 | Y | |
| W-830-2216 | EW | Tnbs2 | S | CMP-TF | E601:ALL | 3 | | |
| W-830-2216 | EW | Tnbs2 | S | DIS-TF | E601:ALL | 4 | | |
| W-830-2216 | EW | Tnbs2 | O | CMP-TF | E8330LOW:ALL | 3 | | |
| W-830-2311 | PTMW | Tnsc1a | A | CMP | E300.0:NO3 | 1 | N | Inoperable pump. |
| W-830-2311 | PTMW | Tnsc1a | A | CMP | E300.0:PERC | 1 | N | Inoperable pump. |
| W-830-2311 | PTMW | Tnsc1a | S | CMP | E601:ALL | 1 | N | Inoperable pump. |
| W-830-2311 | PTMW | Tnsc1a | S | CMP | E601:ALL | 3 | | |
| W-831-01 | PTMW | LTnbs1 | O | CMP | E300.0:NO3 | 1 | Y | |
| W-831-01 | PTMW | LTnbs1 | O | CMP | E300.0:PERC | 1 | Y | |
| W-831-01 | PTMW | LTnbs1 | O | CMP | E601:ALL | 1 | Y | |
| W-832-01 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-01 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-01 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-832-01 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-01 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-832-01 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-01 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-832-06 | PTMW | Tnsc1a | A | CMP | E300.0:NO3 | 1 | Y | |
| W-832-06 | PTMW | Tnsc1a | A | CMP | E300.0:PERC | 1 | Y | |
| W-832-06 | PTMW | Tnsc1a | S | CMP | E601:ALL | 1 | Y | |
| W-832-06 | PTMW | Tnsc1a | S | CMP | E601:ALL | 3 | | |
| W-832-09 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-832-09 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-832-09 | PTMW | LTnbs1 | S | CMP | E601:ALL | 1 | Y | |
| W-832-09 | PTMW | LTnbs1 | S | CMP | E601:ALL | 3 | | |
| W-832-10 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-10 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-10 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-832-10 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-10 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-832-10 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-10 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-832-11 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-11 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-11 | EW | Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-832-11 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-11 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-832-11 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-11 | EW | Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-832-12 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-12 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-12 | EW | Qal/WBR-Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-832-12 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-12 | EW | Qal/WBR-Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-832-12 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-12 | EW | Qal/WBR-Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-832-13 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-13 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-13 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-13 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-14 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-14 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |

**Table 2.7-7 (Con't.). Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-832-14 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-14 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | A | DIS-TF | E300.0:NO3 | 3 | | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | A | DIS-TF | E300.0:PERC | 3 | | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | S | DIS-TF | E601:ALL | 2 | Y | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | S | DIS-TF | E601:ALL | 4 | | |
| W-832-15 | EW | Qal/WBR-Tnsc1b | E | CMP-TF | E8330LOW:ALL | 2 | | To be sampled in 2012. |
| W-832-16 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-16 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-16 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-16 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-17 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-17 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-17 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-17 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-18 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-18 | EW | Qal/WBR-Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-18 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-18 | EW | Qal/WBR-Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-19 | PTMW | Qal/WBR-Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-832-19 | PTMW | Qal/WBR-Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-832-19 | PTMW | Qal/WBR-Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-832-19 | PTMW | Qal/WBR-Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-832-20 | EW | Tnsc1b | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-20 | EW | Tnsc1b | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-20 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 1 | Y | |
| W-832-20 | EW | Tnsc1b | S | CMP-TF | E601:ALL | 3 | | |
| W-832-21 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-832-21 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | N | Dry. |
| W-832-21 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | N | Dry. |
| W-832-21 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-832-22 | EW | UTnbs1 | A | CMP-TF | E300.0:NO3 | 1 | N | Insufficient water. |
| W-832-22 | EW | UTnbs1 | A | CMP-TF | E300.0:PERC | 1 | N | Insufficient water. |
| W-832-22 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 1 | N | Insufficient water. |
| W-832-22 | EW | UTnbs1 | S | CMP-TF | E601:ALL | 3 | | |
| W-832-23 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |
| W-832-23 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-832-23 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-832-23 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-832-24 | PTMW | Tnsc1a | A | CMP | E300.0:NO3 | 1 | Y | |
| W-832-24 | PTMW | Tnsc1a | A | CMP | E300.0:PERC | 1 | Y | |
| W-832-24 | PTMW | Tnsc1a | S | CMP | E601:ALL | 1 | Y | |
| W-832-24 | PTMW | Tnsc1a | S | CMP | E601:ALL | 3 | | |
| W-832-25 | EW | Tnsc1a | A | CMP-TF | E300.0:NO3 | 1 | Y | |
| W-832-25 | EW | Tnsc1a | A | CMP-TF | E300.0:PERC | 1 | Y | |
| W-832-25 | EW | Tnsc1a | A | DIS-TF | E300.0:PERC | 3 | | |
| W-832-25 | EW | Tnsc1a | S | DIS-TF | E601:ALL | 2 | Y | |
| W-832-25 | EW | Tnsc1a | S | CMP-TF | E624:ALL | 1 | Y | |
| W-832-25 | EW | Tnsc1a | S | CMP-TF | E624:ALL | 3 | | |
| W-832-25 | EW | Tnsc1a | S | DIS-TF | E624:ALL | 4 | | |
| W-832-1927 | PTMW | Tnsc1b | A | CMP | E300.0:NO3 | 1 | Y | |

**Table 2.7-7 (Con't.). Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-832-1927 | PTMW | Tnsc1b | A | CMP | E300.0:PERC | 1 | Y | |
| W-832-1927 | PTMW | Tnsc1b | S | CMP | E601:ALL | 1 | Y | |
| W-832-1927 | PTMW | Tnsc1b | S | CMP | E601:ALL | 3 | | |
| W-832-2112 | GW | UTnbs1 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-832-2112 | GW | UTnbs1 | S | CMP | E300.0:NO3 | 3 | | |
| W-832-2112 | GW | UTnbs1 | S | CMP | E300.0:PERC | 1 | Y | |
| W-832-2112 | GW | UTnbs1 | S | CMP | E300.0:PERC | 3 | | |
| W-832-2112 | GW | UTnbs1 | Q | CMP | E601:ALL | 1 | Y | |
| W-832-2112 | GW | UTnbs1 | Q | CMP | E601:ALL | 2 | Y | |
| W-832-2112 | GW | UTnbs1 | Q | CMP | E601:ALL | 3 | | |
| W-832-2112 | GW | UTnbs1 | Q | CMP | E601:ALL | 4 | | |
| W-832-SC1 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-832-SC1 | PTMW | Qal/WBR | O | CMP | E300.0:PERC | 1 | N | Dry. |
| W-832-SC1 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | N | Dry. |
| W-832-SC1 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-832-SC2 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-832-SC2 | PTMW | Qal/WBR | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-832-SC2 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | N | Dry. |
| W-832-SC2 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-832-SC3 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| W-832-SC3 | PTMW | Qal/WBR | O | CMP | E300.0:PERC | 1 | Y | |
| W-832-SC3 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| W-832-SC3 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-832-SC4 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| W-832-SC4 | PTMW | Qal/WBR | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-832-SC4 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| W-832-SC4 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-870-01 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-870-01 | PTMW | Qal/WBR | O | CMP | E300.0:PERC | 1 | N | Dry. |
| W-870-01 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | N | Dry. |
| W-870-01 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| W-870-02 | PTMW | Tnbs2 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-870-02 | PTMW | Tnbs2 | E | CMP | E300.0:PERC | 1 | | To be sampled in 2012. |
| W-870-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 1 | Y | |
| W-870-02 | PTMW | Tnbs2 | S | CMP | E601:ALL | 3 | | |
| SVI-830-031 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| SVI-830-031 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | Y | |
| SVI-830-031 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| SVI-830-031 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| SVI-830-032 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| SVI-830-032 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | Y | |
| SVI-830-032 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| SVI-830-032 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| SVI-830-033 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| SVI-830-033 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | Y | |
| SVI-830-033 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| SVI-830-033 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| SVI-830-035 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| SVI-830-035 | PTMW | Qal/WBR | A | CMP | E300.0:PERC | 1 | Y | |
| SVI-830-035 | PTMW | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| SVI-830-035 | PTMW | Qal/WBR | S | CMP | E601:ALL | 3 | | |
| SPRING3 | SPR | Qal/WBR | A | CMP | E300.0:NO3 | 1 | Y | |
| SPRING3 | SPR | Qal/WBR | A | CMP | E300.0:PERC | 1 | Y | |
| SPRING3 | SPR | Qal/WBR | S | CMP | E601:ALL | 1 | Y | |
| SPRING3 | SPR | Qal/WBR | S | CMP | E601:ALL | 3 | | |

**Table 2.7-7 (Con't.). Building 832 Canyon Operable Unit ground and surface water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| SPRING4 | SPR | Tpsg-Tps | O | CMP | E300.0:NO3 | 1 | N | Dry. |
| SPRING4 | SPR | Tpsg-Tps | O | CMP | E300.0:PERC | 1 | N | Dry. |
| SPRING4 | SPR | Tpsg-Tps | O | CMP | E601:ALL | 1 | N | Dry. |
| W-880-01 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 1 | Y | |
| W-880-01 | GW | Tnbs2 | S | CMP | E300.0:NO3 | 3 | | |
| W-880-01 | GW | Tnbs2 | S | CMP | E300.0:PERC | 1 | Y | |
| W-880-01 | GW | Tnbs2 | S | CMP | E300.0:PERC | 3 | | |
| W-880-01 | GW | Tnbs2 | Q | CMP | E601:ALL | 1 | Y | |
| W-880-01 | GW | Tnbs2 | Q | CMP | E601:ALL | 2 | Y | |
| W-880-01 | GW | Tnbs2 | Q | CMP | E601:ALL | 3 | | |
| W-880-01 | GW | Tnbs2 | Q | CMP | E601:ALL | 4 | | |
| W-880-01 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-880-01 | GW | Tnbs2 | S | CMP | E8330LOW:ALL | 3 | | |
| W-880-02 | GW | Qal/WBR | S | CMP | E300.0:NO3 | 1 | Y | |
| W-880-02 | GW | Qal/WBR | S | CMP | E300.0:NO3 | 3 | | |
| W-880-02 | GW | Qal/WBR | S | CMP | E300.0:PERC | 1 | Y | |
| W-880-02 | GW | Qal/WBR | S | CMP | E300.0:PERC | 3 | | |
| W-880-02 | GW | Qal/WBR | Q | CMP | E601:ALL | 1 | Y | |
| W-880-02 | GW | Qal/WBR | Q | CMP | E601:ALL | 2 | Y | |
| W-880-02 | GW | Qal/WBR | Q | CMP | E601:ALL | 3 | | |
| W-880-02 | GW | Qal/WBR | Q | CMP | E601:ALL | 4 | | |
| W-880-02 | GW | Qal/WBR | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-880-02 | GW | Qal/WBR | S | CMP | E8330LOW:ALL | 3 | | |
| W-880-03 | GW | Tnsc1b | S | CMP | E300.0:NO3 | 1 | Y | |
| W-880-03 | GW | Tnsc1b | S | CMP | E300.0:NO3 | 3 | | |
| W-880-03 | GW | Tnsc1b | S | CMP | E300.0:PERC | 1 | Y | |
| W-880-03 | GW | Tnsc1b | S | CMP | E300.0:PERC | 3 | | |
| W-880-03 | GW | Tnsc1b | Q | CMP | E601:ALL | 1 | Y | |
| W-880-03 | GW | Tnsc1b | Q | CMP | E601:ALL | 2 | N | Inoperable pump. |
| W-880-03 | GW | Tnsc1b | Q | CMP | E601:ALL | 3 | | |
| W-880-03 | GW | Tnsc1b | Q | CMP | E601:ALL | 4 | | |
| W-880-03 | GW | Tnsc1b | S | CMP | E8330LOW:ALL | 1 | Y | |
| W-880-03 | GW | Tnsc1b | S | CMP | E8330LOW:ALL | 3 | | |

**Notes:**

**1) Building 830 primary Contaminants of Concern in Ground Water: VOCs (E601 or E624).**

**2) Building 830 secondary COC: nitrate (E300:NO3).**

**3) Building 830 secondary COC: perchlorate (E300.0:PERC).**

**4) Building 832 primary Contaminants of Concern in Ground Water: VOCs (E601 or E624).**

**5) Building 832 secondary COC: nitrate (E300:NO3).**

**6) Building 832 secondary COC: perchlorate (E300.0:PERC).**

**7) Building 830 vadose zone COC: HMX.**

**8) See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.7-8. Building 832-Source (832-SRC) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 832-SRC | January | 0 | 0 | 0 | 0 | NA | NA |
| | February | 0 | 2.7 | 0.15 | 2.4 | NA | NA |
| | March | 0.094 | 2.1 | 0.23 | 3.3 | NA | NA |
| | April | 0.41 | 7.4 | 0.41 | 6.0 | NA | NA |
| | May | 0.58 | 7.4 | 0.38 | 5.6 | NA | NA |
| | June | 0.42 | 5.6 | 0.29 | 4.3 | NA | NA |
| Total | | 1.5 | 25 | 1.5 | 21 | NA | NA |

**Table 2.7-9. Building 830-Source (830-SRC) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 830-SRC | January | 0 | 18 | 0 | 6.9 | NA | NA |
| | February | 0 | 130 | 0.49 | 13 | NA | NA |
| | March | 0 | 76 | 0.31 | 8.9 | NA | NA |
| | April | 1.5 | 1.4 | 0.0047 | 0.098 | NA | NA |
| | May | 77 | 96 | 0.40 | 7.6 | NA | NA |
| | June | 140 | 150 | 0.55 | 13 | NA | NA |
| Total | | 220 | 470 | 1.7 | 49 | NA | NA |

**Table 2.7-10. Building 830-Distal South (830-DISS) mass removed, January 1, 2011 through June 30, 2011.**

| Treatment facility | Month | SVTS VOC mass removed (g) | GWTS VOC mass removed (g) | Perchlorate mass removed (g) | Nitrate mass removed (kg) | RDX mass removed (g) | TBOS/TKEBS mass removed (g) |
|---|---|---|---|---|---|---|---|
| 830-DISS | January | NA | 0 | 0 | 0 | NA | NA |
| | February | NA | 13 | 0.77 | 33 | NA | NA |
| | March | NA | 15 | 0.89 | 40 | NA | NA |
| | April | NA | 9.8 | 1.3 | 35 | NA | NA |
| | May | NA | 10 | 1.7 | 40 | NA | NA |
| | June | NA | 8.9 | 1.5 | 34 | NA | NA |
| Total | | NA | 57 | 6.2 | 180 | NA | NA |

**Table 2.8-1. Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K8-01 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K8-01 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K8-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| K8-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| K8-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E601:ALL | 2 | Y | |
| K8-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E601:ALL | 4 | | |
| K8-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K8-01 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K8-02B | DMW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 4 | | |
| K8-02B | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 4 | | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 1 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 3 | | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 4 | | |
| K8-02B | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 1 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 3 | | |
| K8-02B | DMW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 4 | | |
| K8-02B | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| K8-02B | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | S | CMP | E601:ALL | 2 | Y | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | S | CMP | E601:ALL | 4 | | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K8-03B | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| K8-04 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | AS:UISO | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | E200.7:LI | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | E300.0:NO3 | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | E300.0:PERC | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | E340.2:ALL | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | E601:ALL | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | E8330LOW:ALL | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | E906:ALL | 2 | N | Dry. |
| K8-05 | DMW | Tnbs1-Tnbs0 | O | CMP | T26METALS:ALL | 2 | N | Dry. |

**Notes appear on the following page.**

**Table 2.8-1 (Con't.). Building 801 and Pit 8 Landfill area ground water sampling and analysis plan.**

**Notes:**

**1) CMP Detection monitoring analyte: tritium (E906) sampled annually.**
**2) CMP Detection monitoring analyte: VOCs (E601 or E624) sampled annually.**
**3) CMP Detection monitoring analyte: fluoride (E340.2) sampled annually.**
**4) CMP Detection monitoring analyte: HE compounds (E8330) sampled annually.**
**5) CMP Detection monitoring analyte: nitrate (E300.0:NO3) sampled annually.**
**6) CMP Detection monitoring analyte: perchlorate (E300.0:PERC) sampled annually.**
**7) CMP Detection monitoring analytes: Title 26 metals plus Li (T26METALS and E200.8:Li) sampled annually.**
**8) CMP Detection monitoring analytes: uranium isotopes (AS:UISO) sampled annually.**
**9) Building 801 primary COC: VOCs (E601 or E624).**
**10) Building 801 secondary COC: nitrate (E300.0:NO3).**
**11) Building 801 secondary COC: perchlorate (E300:PERC) .**
**12) See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.8-2. Building 833 area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-833-03 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Dry. |
| W-833-12 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-833-18 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Dry. |
| W-833-22 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Dry. |
| W-833-28 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Insufficient water. |
| W-833-30 | PTMW | Tpsg | S | CMP | E601:ALL | 1 | Y | |
| W-833-30 | PTMW | Tpsg | S | CMP | E601:ALL | 3 | | |
| W-833-33 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | Y | |
| W-833-34 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Dry. |
| W-833-43 | PTMW | Tpsg | A | CMP | E601:ALL | 1 | N | Dry. |
| W-840-01 | PTMW | LTnbs1 | A | CMP | E300.0:NO3 | 1 | Y | |
| W-840-01 | PTMW | LTnbs1 | A | CMP | E300.0:PERC | 1 | Y | |
| W-840-01 | PTMW | LTnbs1 | A | CMP | E601:ALL | 1 | Y | |
| W-841-01 | PTMW | UTnbs1 | O | CMP | E300.0:NO3 | 1 | N | Dry. |
| W-841-01 | PTMW | UTnbs1 | O | CMP | E300.0:PERC | 1 | N | Dry. |
| W-841-01 | PTMW | UTnbs1 | A | CMP | E601:ALL | 1 | N | Dry. |

**Notes:**

**1) Building 833 primary COC: VOCs (E601).**

**2) See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 2.8-3. Building 845 Firing Table and Pit 9 Landfill area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K9-01 | DMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | E200.7:LI | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | E300.0:PERC | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | E340.2:ALL | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | E601:ALL | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | E906:ALL | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | DIS | MS:UISO | 2 | Y | |
| K9-01 | DMW | Tnsc0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | E200.7:LI | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | E300.0:PERC | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | E340.2:ALL | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | E601:ALL | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | E906:ALL | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | DIS | MS:UISO | 2 | Y | |
| K9-02 | DMW | Tnsc0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | AS:UISO | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | E200.7:LI | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | E300.0:PERC | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | E340.2:ALL | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | E601:ALL | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | E906:ALL | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | DIS | MS:UISO | 2 | Y | |
| K9-03 | DMW | Tnsc0 | A | CMP | T26METALS:ALL | 2 | Y | |
| K9-04 | DMW | Tnsc0 | A | CMP | AS:UISO | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | E200.7:LI | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | E300.0:NO3 | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | E300.0:PERC | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | E340.2:ALL | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | E601:ALL | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | E8330LOW:ALL | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | E906:ALL | 2 | N | Inoperable pump. |
| K9-04 | DMW | Tnsc0 | A | CMP | T26METALS:ALL | 2 | N | Inoperable pump. |

**Notes:**

**1) No COCs in ground water.**

**2) CMP Detection monitoring analyte: tritium (E906) sampled annually.**

**3) CMP Detection monitoring analyte: VOCs (E601 or E624) sampled annually.**

**4) CMP Detection monitoring analyte: fluoride (E340.2) sampled annually.**

**5) CMP Detection monitoring analyte: HE compounds (E8330) sampled annually.**

**6) CMP Detection monitoring analyte: nitrate (E300.0:NO3) sampled annually.**

**7) CMP Detection monitoring analyte: perchlorate (E300.0:PERC) sampled annually.**

**8) CMP Detection monitoring analytes: Title 26 metals plus Li (T26METALS and E200.8:Li) sampled annually.**

**9) CMP Detection monitoring analytes: uranium isotopes (AS:UISO) sampled annually.**

**10) COC in the Vadose Zone not detected in Ground Water: HE Compounds and uranium.**

**11) See Acronyms and Abbreviations in the Table section of this report for acronym and abbreviation definitions.**

**Table 2.8-4. Building 851 area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-851-05 | PTMW | Tmss | S | CMP | AS:UISO | 2 | Y | |
| W-851-05 | PTMW | Tmss | S | CMP | AS:UISO | 4 | | |
| W-851-05 | PTMW | Tmss | O | CMP | E601:ALL | 2 | Y | |
| W-851-05 | PTMW | Tmss | A | DIS | MS:UISO | 2 | Y | |
| W-851-06 | PTMW | Tmss | S | CMP | AS:UISO | 2 | Y | |
| W-851-06 | PTMW | Tmss | S | CMP | AS:UISO | 4 | | |
| W-851-06 | PTMW | Tmss | A | DIS | MS:UISO | 2 | Y | |
| W-851-07 | PTMW | Tmss | S | CMP | AS:UISO | 2 | Y | |
| W-851-07 | PTMW | Tmss | S | CMP | AS:UISO | 4 | | |
| W-851-07 | PTMW | Tmss | A | DIS | MS:UISO | 2 | Y | |
| W-851-08 | PTMW | Tmss | S | CMP | AS:UISO | 2 | Y | |
| W-851-08 | PTMW | Tmss | S | CMP | AS:UISO | 4 | | |
| W-851-08 | PTMW | Tmss | A | DIS | MS:UISO | 2 | Y | |

**Notes:**

**1) Building 851 primary COC: uranium (AS:UISO).**

**2) Contaminants of Concern in the Vadose Zone not detected in Ground Water: VOCs (E601).**

**3) See Acronyms and Abbreviations in the Table section of this report for acronym and abbreviation definitions.**

**Table 3.1-1. Pit 2 Landfill area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| K2-01C | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | N | Unsafe conditions. |
| K2-01C | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | N | Unsafe conditions |
| K2-01C | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | N | Unsafe conditions. |
| K2-01C | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | N | Unsafe conditions. |
| K2-01C | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| K2-01C | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | N | Unsafe conditions |
| K2-01C | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | N | Unsafe conditions. |
| K2-01C | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | N | Unsafe conditions |
| K2-01C | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | N | Unsafe conditions. |
| K2-01C | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| K2-01C | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | N | Unsafe conditions. |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| NC2-08 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| W-PIT2-1934 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | CMP | E200.7:LI | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | CMP | E340.2:ALL | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | CMP | E601:ALL | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | CMP | E8330LOW:ALL | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | DIS | MS:UISO | 2 | Y | |
| W-PIT2-1935 | DMW | Tnbs1-Tnbs0 | A | CMP | T26METALS:ALL | 2 | Y | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 2 | Y | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | S | CMP | AS:UISO | 4 | | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | S | CMP | E300.0:NO3 | 4 | | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 1 | Y | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 2 | Y | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 3 | | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E300.0:PERC | 4 | | |

**Table 3.1-1 (Con't.). Pit 2 Landfill area ground water sampling and analysis plan.**

| Sample Location | Location Type | Hydro Unit | Sampling Frequency | Sample Driver | Requested Analysis | Sampling Quarter | Sampled Y/N | Comment |
|---|---|---|---|---|---|---|---|---|
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 1 | Y | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 2 | Y | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 3 | | |
| W-PIT2-2226 | GW | Tnbs1-Tnbs0 | Q | CMP | E906:ALL | 4 | | |
| W-PIT2-2301 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT2-2301 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT2-2301 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| W-PIT2-2301 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| W-PIT2-2301 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-PIT2-2301 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT2-2301 | PTMW | Qal/WBR | A | DIS | MS:UISO | 2 | Y | |
| W-PIT2-2302 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | Y | |
| W-PIT2-2302 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | Y | |
| W-PIT2-2302 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | Y | |
| W-PIT2-2302 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| W-PIT2-2302 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | Y | |
| W-PIT2-2302 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT2-2302 | PTMW | Qal/WBR | A | CMP | MS:UISO | 2 | Y | |
| W-PIT2-2303 | PTMW | Qal/WBR | A | CMP | AS:UISO | 2 | N | Dry. |
| W-PIT2-2303 | PTMW | Qal/WBR | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-PIT2-2303 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 2 | N | Dry. |
| W-PIT2-2303 | PTMW | Qal/WBR | S | CMP | E300.0:PERC | 4 | | |
| W-PIT2-2303 | PTMW | Qal/WBR | S | CMP | E906:ALL | 2 | N | Dry. |
| W-PIT2-2303 | PTMW | Qal/WBR | S | CMP | E906:ALL | 4 | | |
| W-PIT2-2304 | PTMW | Tnbs1-Tnbs0 | A | CMP | AS:UISO | 2 | N | Dry. |
| W-PIT2-2304 | PTMW | Tnbs1-Tnbs0 | A | CMP | E300.0:NO3 | 2 | N | Dry. |
| W-PIT2-2304 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 2 | N | Dry. |
| W-PIT2-2304 | PTMW | Tnbs1-Tnbs0 | S | CMP | E300.0:PERC | 4 | | |
| W-PIT2-2304 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 2 | N | Dry. |
| W-PIT2-2304 | PTMW | Tnbs1-Tnbs0 | S | CMP | E906:ALL | 4 | | |

**Notes:**

**1) CMP Detection monitoring analyte: tritium (E906) sampled annually.**
**2) CMP Detection monitoring analyte: VOCs (E601 or E624) sampled annually.**
**3) CMP Detection monitoring analyte: fluoride (E340.2) sampled annually.**
**4) CMP Detection monitoring analyte: HE compounds (E8330) sampled annually.**
**5) CMP Detection monitoring analyte: nitrate (E300.0:NO3) sampled annually.**
**6) CMP Detection monitoring analyte: perchlorate (E300.0:PERC) sampled annually.**
**7) CMP Detection monitoring analytes: Title 26 metals plus Li (T26METALS and E200.8:Li) sampled annually.**
**8) CMP Detection monitoring analytes: uranium isotopes (AS:UISO) sampled annually.**
**9) See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

**Table 4.2-1. Cadmium concentrations detected in surface soil in the Buildings 801, 851, 815 and 827 areas and near Well 18.**

| Building 801 area | | Building 851 area | | Building 815 area | | Well 18 area | | Building 827 area | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Location[a] | Cadmium mg/kg | Sample Location[b] | Cadmium mg/kg | Sample Location[c] | Cadmium mg/kg | Sample Location[d] | Cadmium mg/kg | Sample Location[e] | Cadmium mg/kg |
| 3SS-12-01 | <0.1 | 3SS-57-02 | <0.1 | 3SS-30-09 | <0.1 | 818-10 | 14 | TK05-827-01 | 1.9 |
| 3SS-12-03 | <0.1 | 3SS-48-01 | <1 | 815-09 | 15 | 3SS-29-03 | <0.1 | TK01-827-02 | 1.2 |
| MS-B801-001 | <0.1 | 3SS-48-04 | <0.1 | 3SS-30-01 | 0.8 | | | TK02-827-01 | 2.5 |
| MS-B801-002 | 3.1 | 3SS-48-05 | <0.1 | | | | | PC-B827-009 | <1 |
| MS-B801-003 | 14 | 3SS-56-05 | <0.1 | | | | | PC-B827-013 | <1 |
| MS-B801-003 (dup) | 12 | 3SS-45-02 | <0.1 | | | | | | |
| MS-B801-004 | 1.1 | 3SS-45-01 | 12 | | | | | | |
| PC-B801-031 | 1 | 3SS-45-01 (dup) | 0.1 | | | | | | |
| | | 3SS-46-03 | <0.1 | | | | | | |
| | | 3SS-45-03 | 0.11 | | | | | | |
| | | 3SS-42-03 | <0.1 | | | | | | |

**Notes:**

**mg/kg = Milligrams per kilogram.**

[a] **Sample locations shown in Figure 4.2-1.**

[b] **Sample locations shown in Figure 4.2-2.**

[c] **Sample locations shown in Figure 4.2-3.**

[d] **Sample locations shown in Figure 4.2-4.**

[e] **Sample locations shown in Figure 4.2-5.**

**Table 4.2-2. Summary of U.S. Environmental Protection Agency Ecological Soil Screening Levels for Cadmium.**

| Receptor | EcoSSL mg/kg[a] | Assumptions |
|---|---|---|
| Terrestrial Plants | 32 | 14 studies using bioavailable forms. Test organisms: ryegrass, lettuce, tomato, oats, corn, garlic, barley, white pine, yellow birch, choke cherry, loblolly pine, red oak, alfalfa |
| Soil Invertebrates | 140 | 10 studies using bioavailable forms. Test organism: earthworms (2 studies), springtails (7 studies), nematode (1 study) |
| Birds | | Toxicity Reference Value based on 33 studies |
| Avian herbivore (dove) | 28 | Assumed to eat all plants |
| Avian ground insectivore (woodcock) | 0.77 | Assumed to eat all earthworms |
| Avian carnivore (hawk) | 630 | Assumed to eat all mammals |
| Mammals | | Toxicity Reference Value based on 145 studies |
| Mammalian herbivore (vole) | 73 | Assumed to eat all plants |
| Mammalian ground insectivore (shrew) | 0.36 | Assumed to eat all earthworms |
| Mammalian carnivore (weasel) | 84 | Assumed to eat all mammals |

**Notes:**

EcoSSL = Ecological Soil Screening Level
mg/kg = Milligrams per kilogram.

[a] U.S. EPA (2005). Ecological Soil Screening Levels for Cadmium Interim Final. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-65. March 2005.

# Appendix A

# Results of Influent and effluent pH Monitoring

**A-1. Results of infuent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2011.**

| Sample Location | Sample Date | Effluent pH Result |
|---|---|---|
| *GSA OU* | | |
| **CGSA GWTS** | **01/05/2011** | **7.2** |
| **CGSA GWTS** | **02/08/2011** | **7.2** |
| **CGSA GWTS** | **03/07/2011** | **7.2** |
| **CGSA GWTS** | **04/06/2011** | **7.0** |
| **CGSA GWTS** | **05/09/2011** | **7.2** |
| **CGSA GWTS** | **06/06/2011** | **7.0** |
| *Building 834 OU* | | |
| **834 GWTS** | **01/31/2011** | **NM** |
| **834 GWTS** | **02/01/2011** | **7.8** |
| **834 GWTS** | **03/14/2011** | **7.8** |
| **834 GWTS** | **04/12/2011** | **8.0** |
| **834 GWTS** | **05/10/2011** | **7.0** |
| **834 GWTS** | **06/30/2011** | **NM** |
| *HEPA OU* | | |
| **815-SRC GWTS** | **01/03/2011** | **7.7** |
| **815-SRC GWTS** | **02/07/2011** | **7.4** |
| **815-SRC GWTS** | **03/07/2011** | **7.0** |
| **815-SRC GWTS** | **04/05/2011** | **7.0** |
| **815-SRC GWTS** | **05/04/2011** | **7.0** |
| **815-SRC GWTS** | **06/06/2011** | **7.0** |
| **815-PRX GWTS** | **01/31/2011** | **NM** |
| **815-PRX GWTS** | **02/28/2011** | **NM** |
| **815-PRX GWTS** | **03/08/2011** | **7.0** |
| **815-PRX GWTS** | **04/11/2011** | **7.0** |
| **815-PRX GWTS** | **05/09/2011** | **7.0** |
| **815-PRX GWTS** | **06/06/2011** | **7.0** |
| **815-DSB GWTS** | **01/04/2011** | **7.0** |
| **815-DSB GWTS** | **02/08/2011** | **7.0** |

**A-1. Results of infuent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2011.**

| Sample Location | Sample Date | Effluent pH Result |
|---|---|---|
| 815-DSB GWTS | 03/07/2011 | 7.0 |
| 815-DSB GWTS | 04/05/2011 | 7.0 |
| 815-DSB GWTS | 05/09/2011 | 7.0 |
| 815-DSB GWTS | 06/06/2011 | 7.0 |
| 817-SRC GWTS | 01/31/2011 | NM |
| 817-SRC GWTS | 02/14/2010 | 8.0 |
| 817-SRC GWTS | 03/08/2011 | 7.3 |
| 817-SRC GWTS | 04/30/2011 | NM |
| 817-SRC GWTS | 05/18/2011 | 7.0 |
| 817-SRC GWTS | 06/06/2011 | 7.0 |
| 817-PRX GWTS | 01/03/2011 | 7.6 |
| 817-PRX GWTS | 02/07/2011 | 7.4 |
| 817-PRX GWTS | 03/07/2011 | 7.5 |
| 817-PRX GWTS | 04/05/2011 | 7.5 |
| 817-PRX GWTS | 05/10/2011 | 7.0 |
| 817-PRX GWTS | 06/06/2011 | 7.0 |
| 829-SRC GWTS | 01/31/2011 | NM |
| 829-SRC GWTS | 02/28/2011 | NM |
| 829-SRC GWTS | 03/31/2011 | NM |
| 829-SRC GWTS | 04/30/2011 | NM |
| 829-SRC GWTS | 05/31/2011 | NM |
| 829-SRC GWTS | 06/30/2011 | NM |
| *Building 850/Pit 7 Complex OU* | | |
| PIT7-SRC GWTS | 01/04/2011 | 7.0 |
| PIT7-SRC GWTS | 02/15/2000 | 7.0 |
| PIT7-SRC GWTS | 03/07/2011 | 7.0 |
| PIT7-SRC GWTS | 04/06/2011 | 7.0 |
| PIT7-SRC GWTS | 05/04/2011 | 7.0 |
| PIT7-SRC GWTS | 06/06/2011 | 7.0 |

**A-1. Results of infuent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2011.**

| Sample Location | Sample Date | Effluent pH Result |
|---|---|---|
| *Building 854 OU* | | |
| **854-SRC GWTS** | **01/04/2011** | **7.0** |
| **854-SRC GWTS** | **02/14/2011** | **7.0** |
| **854-SRC GWTS** | **03/07/2011** | **7.0** |
| **854-SRC GWTS** | **04/04/2011** | **7.0** |
| **854-SRC GWTS** | **05/04/2011** | **7.0** |
| **854-SRC GWTS** | **06/06/2011** | **7.0** |
| **854-PRX GWTS** | **01/31/2011** | **NM** |
| **854-PRX GWTS** | **02/28/2011** | **NM** |
| **854-PRX GWTS** | **03/31/2011** | **NM** |
| **854-PRX GWTS** | **04/18/2011** | **7.0** |
| **854-PRX GWTS** | **05/09/2011** | **7.0** |
| **854-PRX GWTS** | **06/06/2011** | **7.0** |
| **854-DIS GWTS** | **01/31/2011** | **NM** |
| **854-DIS GWTS** | **02/08/2011** | **7.0** |
| **854-DIS GWTS** | **03/07/2011** | **7.0** |
| **854-DIS GWTS** | **04/04/2011** | **7.0** |
| **854-DIS GWTS** | **05/04/2011** | **7.0** |
| **854-DIS GWTS** | **06/06/2011** | **7.0** |
| *832 Canyon OU* | | |
| **832-SRC GWTS** | **01/31/2011** | **NM** |
| **832-SRC GWTS** | **02/07/2011** | **7.7** |
| **832-SRC GWTS** | **03/01/2011** | **7.7** |
| **832-SRC GWTS** | **04/11/2011** | **7.7** |
| **832-SRC GWTS** | **05/10/2011** | **7.0** |
| **832-SRC GWTS** | **06/01/2011** | **7.0** |
| **830-SRC GWTS** | **01/04/2011** | **7.5** |
| **830-SRC GWTS** | **02/07/2011** | **7.6** |
| **830-SRC GWTS** | **03/14/2011** | **7.3** |

**A-1. Results of infuent and effluent pH, and effluent dissolved oxygen monitoring, January through June 2011.**

| Sample Location | Sample Date | Effluent pH Result |
|---|---|---|
| 830-SRC GWTS | 04/06/2011 | 7.2 |
| 830-SRC GWTS | 05/23/2011 | 7.0 |
| 830-SRC GWTS | 06/06/2011 | 7.0 |
| 830-DISS GWTS | 01/04/2011 | 7.0 |
| 830-DISS GWTS | 02/08/2011 | 7.0 |
| 830-DISS GWTS | 03/07/2011 | 7.0 |
| 830-DISS GWTS | 04/07/2011 | 7.0 |
| 830-DISS GWTS | 05/09/2011 | 7.0 |
| 830-DISS GWTS | 06/06/2011 | 7.0 |

**Notes:**

834 = Building 834.
815 = Building 815.
817 = Building 817.
829 = Building 829.
854 = Building 854.
832 = Building 832.
830 = Building 830.
CGSA = Central General Services Area.
EGSA = Eastern General Services Area.
DISS = Distal south.
DSB = Distal site boundary.
GWTS = Ground water treatment system.
PRX = Proximal.
PRXN = Proximal North.
SRC = Source.
NA = Not applicable.
NM = Not measured due to facility not operating during this period.
NR = Not required.
OU = Operable unit.
pH = A measure of the acidity or alkalinity of an aqueous solution.
mg/L = milligrams per liter

# Appendix B

# Building 834 T2 Area *In Situ* Bioremediation Monitoring Data

**B-1. Results of light hydrocarbon monitoring for the Building 834 T2 area bioremediation treatability study.**

| Sample Location | Sample Date | Ethane (µg/L) | Ethene (µg/L) | Methane (µg/L) |
|---|---|---|---|---|
| W-834-1824 | 3/30/11 | 0.07 | 2.6 | 8,500 |
| W-834-1825 | 3/30/11 | 0.05 | 32 | 5,400 |
| W-834-1833 | 3/30/11 | 0.03 | 0.22 | 0.83 |
| W-834-T2 | 3/30/11 | 0.84 | 410 | 11,000 |

**Notes:**

**See Acronyms and Abbreviations in the Tables section of this report for definitions.**

**B-2. Results of oxygen-reduction potential (ORP) monitoring for the Building 834 T2 area bioremediation treatability study.**

| Date | W-834-1824 (mv) | W-834-1825 (mv) | W-834-1833 (mv) | W-834-T2 (mv) |
|---|---|---|---|---|
| 3/30/11 | –185 | –145 | 103 | –105 |

**Notes:**

***In Situ* ORP monitoring discontinued after August, 2009; ORP monitoring conducted at surface with Ultra Meter.**

**See Acronyms and Abbreviations in the Tables section of this report for acronym and abbreviation definitions.**

# Errata

The following sections were missing or incomplete in the 2010 Annual CMR.

#### *2.2.3.3. Building 834 OU Remediation Optimization Evaluation*

Throughout 2010, dual-phase extraction and treatment continued in the Building 834 area with minor exceptions as described in the first semester 2010 CMR and Section 2.2.1.2 above. During 2010, no modifications were made to the core or leachfield area extraction wellfields. Substantially more VOC mass is being removed by soil vapor extraction than by ground water extraction. Of the 7.73 kg of VOCs removed during 2010, 6.45 kg were removed in the vapor phase. About 37% of the vapor mass was removed from the core area and 63% from the leachfield area. However, most of the 1.28 kg of dissolved phase VOC mass that was removed came from the core area (1.08 kg).

TCE biodegradation continues within the core area where significant amounts of TBOS/TKEBS are present and serve as an electron donor for intrinsic *in situ* biodegradation. Historically, the primary byproduct of this biodegradation has been cis-1,2-dichloroethene (DCE), although limited vinyl chloride has also been detected. In 2010, both cis-1,2-DCE and vinyl chloride were detected in core area ground water, at maximum concentrations of 20,000 µg/L and 130 µg/L, respectively.

The extraction wellfield for the Tpsg HSU within the core area continues to adequately capture the highest VOC concentrations in ground water. In the leachfield area, the extraction wellfield continues to capture portions of the VOCs in ground water. However, the highest concentrations (in the vicinity of monitor well W-834-2113) are not fully captured. Accordingly, the leachfield area is under consideration for future extraction wellfield optimization.

Enhanced *in situ* bioremediation is being evaluated as a long-term treatability test described in Section 2.2.3.4. The total VOC concentrations in the area impacted by the bioremediation experiment have decreased significantly due to a combination of *in situ* biostimulation, bioaugmentation, and dilution.

Total VOC concentration trends in the underlying Tps-Tnsc$_2$ HSU will continue to be monitored closely to evaluate beneficial impacts from active remediation of the overlying Tpsg HSU. The effectiveness of extracting from this low permeability, limited recharge HSU will be evaluated. The use and feasibility of enhanced *in situ* remediation technologies, such as reagent injection coupled with bio-augmentation, will be considered if conventional ground water extraction shows limited effectiveness.

Total VOCs and their extent in ground water are expected to continue to decrease over time as remediation progresses. The deep regional Tnbs$_1$ aquifer continues to be free of contaminants as demonstrated by quarterly analyses of ground water from guard wells W-834-T1 and W-834-T3, both screened in the lower Tnbs$_1$ HSU.

#### *2.2.3.4. T2 Treatability Study*

The T2 treatability study, which began in 2005, continued during the first semester 2010. One of the primary objectives of this study is to assess the performance of passive *in situ* bioremediation of TCE at concentrations greater than 10,000 µg/L in a low yield water-bearing zone (Tpsg HSU) that is typical of VOC source areas at Site 300.

The technology is considered passive because it relies solely on injection of nutrients and bacteria without the aid of any active extraction wells. In this treatability study, an isotopically distinct conservative tracer, Hetch-Hetchy (H-H) water, and light hydrocarbon (LHC) analysis of TCE breakdown products, such as ethene, are being used to distinguish bacterial dechlorination of TCE from dilution of the plume resulting from reagent and H-H tracer injection. In 2008, Tpsg ground water was bioaugmented with a consortium of dechlorinating bacteria (KB-1) that contain a strain of Dehalococoides capable of complete dechlorination of TCE to ethene.

During this reporting period, monitoring for various chemical parameters and ground water levels continued. The reduction-oxidation (redox) conditions became slightly less reducing in all wells except for W-834-1833, which went from + 68 milivolts in March to - 66 milivolts in August 2010 (Table B-2). This well is downgradient from the well that was bioaugmented, W-834-1825, and indicates that anaerobic water has reached this well. Although it was previously reported that ethene production in well W-834-1825 had dropped to 0.2 µg/L in March 2010 from 37 µg/L at the end of 2009, this was reported incorrectly. The ethene production in this well has actually remained relatively stable, and was measured at 15 µg/L in March, and 31 µg/L in August of 2010. The ethene production in W-834-T2 is still an-order-of magnitude higher than in W-834-1825, but it has continued to decrease and was measured at 370 µg/L in August 2010 (Table B-1). Although W-834-1825 had ample carbon donor concentrations in March (2,700 mg/L of combined fatty acids), both wells appear to now be carbon donor limited as indicated by the low concentrations of volatile fatty acids measured in August 2010. However, the levels of total carbon donor in W-834-T2 have remained stable in 2010 while they have dropped dramatically in W-834-1825. Only injection well W-834-1824 still contains relatively high concentrations of carbon donor, measured at 8,200 mg/L of combined fatty acids. None of the other T2 area wells have shown any appreciable ethene production. The most notable difference in trends exhibited by the T2 area wells concerns VOC rebound. In W-834-1825, the total VOC concentrations decreased from 93µg/L in March to 16 µg/L in August 2010, while total VOCs in W-834-T2 rebounded from 1,300 µg/L to 2,500 µg/L during the same period. Total VOC concentrations also increased in W-834-1833 from 5,000 to 7,500 µg/L. However, very little change in total VOCs was observed in ground water sampled from well W-834-1824, currently 36 µg/L. As mentioned above, although reducing conditions are now being observed well W-834-1833, no evidence of biodegradation has been observed to date and all VOC rebound is primarily TCE. This is understandable due to the almost total lack of fatty acids measured in W-834-1833. This is in contrast to the VOC rebound at W-834-T2, where TCE, cis-1,2-DCE, and vinyl chloride are all observed, indicating that at least some biodegradation is still occurring.

#### *2.2.3.5. Building 834 OU Remedy Performance Issues*

There were no new issues that affect the performance of the cleanup remedy for the Building 834 OU during this reporting period. Although the remedy continues to be effective and protective of human health and the environment, and to make progress toward cleanup in the Tpsg HSU, it has not had significant impact decreasing VOC concentrations in the underlying Tps-Tnsc$_2$ HSU beneath the core area.

# Attachments

*Interdepartmental letterhead*
*Mail Station L-* 544
*Ext* 3-8099

FACILITIES & INFRASTRUCTURE

**ENVIRONMENTAL RESTORATION DEPARTMENT**

May 11, 2011

TO: Chris Campbell
Leslie Ferry
Gretchen Gallegos
Pete McKereghan

FROM: Rebecca Goodrich RG

SUBJECT: BC Priority 1 Findings

ERD was informed on May 6, 2001, by a Lead Auditor who participated in the recent Department of Energy Consolidated Auditing Program (DOECAP) audit of BC Laboratories performed May 2 thru May 5, 2011, that several Priority 1 findings were identified. As a follow-up to the notification, an ERD DOECAP auditor disseminated the information regarding the findings to ERD Program Leaders, and hydrogeologists on May 9, 2011. The Priority 1 findings span the time frame from 2010 to present and include a failed analysis of a performance evaluation (PE) sample for Copper and Beryllium by method SM 3113 or 200.9. The results were biased high. The analysis of a PE sample for Chloride by method 300.0 failed and the results were biased low. Issues with the minimum detection limit (MDL) studies for Thallium and Silver by SM 3113 or 200.9 were also identified.

A follow-up notification was received on May 11, 2011, regarding an additional finding that arose from the initial Priority 1 findings in that BC Laboratories had been using the correct method (200.9) to analyze Beryllium and Silver, but had been incorrectly reporting the method electronically and on hard copy results. In accordance with the EPA method update rule implemented in June 2007, Beryllium and Silver analyses were to be performed by either method 200.9/200.8/3113B or equivalent. BC Laboratories continued to report Beryllium as analyzed by method 210.0 and Silver by method 272.2 as had been used prior to the EPA method update. Corrective action was taken on ERD's behalf to document the method used by BC Laboratories in ERD's database for these test results from June 2007 to present by updating the anl_method field to "200.9 or equivalent" providing a more accurate description of the method used by BC Labs. The corrective action will be applied to ERD and EFA data.

The flawed MDL studies for Thallium and Silver do not impact ERD data since we do not request that data be reported to the MDL.

The PE biased high sample analysis for Copper and Beryllium may affect these metals results in analytical suites such as NPDESMETAL, NPDESMET2, T26METALS (Be only by 3113 B or 200.8), and METROSURV. Upon examining queried results from ERD's database, there was a single positive detection for Copper analyzed by 200.9 and no positive detections for Beryllium by 200.9 or 3113 B from January 2010 to present.

Lastly, the failed PE analysis for Chloride, which was biased low does not impact data reported in regulatory reports. Chloride results from treatment facility discharges are reported annually (January 2010 and January 2011) in the LLNL Livermore Quarterly Self-Monitoring Report. The MCL for Chloride in drinking water is 250 mg/L. ERD's concern is with Chloride exceeding an established discharge limit; therefore, the biased low failure of the PE sample does not affect ERD data for this analyte.

Until corrective action is taken by BC Laboratories and applicable PE samples are successfully analyzed, a decision should be made to either continue using BC Labs to perform these tests based on negligible impact to data or re-direct samples for these analyses to another analytical lab until the findings have been resolved.

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